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## Original Articles.

### THE HISTORY OF THE INVENTION AND OF THE DEVELOPMENT OF THE OPHTHALMOSCOPE.*


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The marvelous advance that modern medicine has made is due in great part to the invention of instruments of precision. They have lent delicacy and accuracy to our methods of examination and have opened new fields that were closed to our unaided senses.

When early in the last century Laennec invented the stethoscope, he gave us the means of discovering morbid processes within the body and thus revolutionized internal medicine. Helmholtz's invention of the ophthalmoscope did the same for ophthalmology. In both cases the field had long been cleared and there was no reason why the instrument should not have been invented earlier, but that in the one case it required the genius of Laennec and in the other the versatile and profoundly scientific talent of Helmholtz to lay bare simple facts which every tyro saw plainly after they had once been pointed out.

As the invention of the stethoscope enabled us to perceive deep-seated morbid processes by means of the sense of hearing, so the invention of the ophthalmoscope gave us the means of recognizing by the sense of sight the normal or abnormal conditions of the fundus of the eye which had been hidden from view during all the ages. Auscultation might have reached a high state of development without any instrumental aid, but no one could ever have seen the details of the fundus oculi without some instrument based upon the principles which Helmholtz discovered.

It is now fifty years since Helmholtz announced his invention in the unpretentious monograph which I here show. It is most fitting that this body representing ophthalmology in America should commemorate the jubilee, and show its grateful appreciation of the work of Helmholtz and of the value of his gift.

It is of special interest to us to take a glance at the gradual accumulation of facts and observations, the building stones which were needed before even a Helmholtz could rear his structure. The most important of these was the observation of the luminous appearance of the pupil. The ancients had observed this in the eyes of certain animals.[1]

The first mention of the observation in the human eye was made in 1796 by Fermin, who found that the pupils of an Ethiopian albino were luminous. Other cases were published, as rare and curious during the first quarter of the 19th century. The statement was made that the light radiating from such eyes illumined the objects on which it fell and enabled the fortunate individual to read in the dark!

The bright yellow appearance of the pupils in certain forms of disease, first mentioned by Scarpa in 1816, was classically described by Beer in 1817 under the title of "Amaurotic Cat's Eye."

We find no mention of luminosity in other than albinotic or diseased eyes until 1837, when Behr observed it in a case of total irideremia and it was not until the forties that the observation was made on normal eyes.

It is interesting to learn the theories that were offered to explain these observations. First it was regarded as a phenomenon of phosphorescence; by some as the light absorbed during the day and given off at night, and later by others as the result of an internal activity similar to that of the fire-fly. It was described as varying with the seasons, with the age of the individual and with his nervous state. Electricity was also called upon to assist in explaining the luminosity of the eye. It was the "naked electricity emitted by the retina, for nowhere in the animal organism is the brain substance exposed to the naked eye as clearly as in the open interior of the eyeball" (Pallas, 1811). But Prevost in 1818 pointed out the true cause: it was the reflection of the light which entered the eye, and Gruithuisen about the same time came to a similar conclusion.

In 1821 Rudolphi added the observation that success of the experiment depended upon having the light thrown in, in a definite direction and that the eyes of the decapitated head of a cat were as easily made luminous as the living.

Esser in 1826 showed that such eyes shone even brighter than the living, because of the larger size of the pupil, and Johannes Mueller expressed the same view.

In 1836 Hasenstein showed that he could make the pupil luminous by compressing the eyeball in its anteroposterior diameter, and in 1845 Bruecke gave the correct explanation of the red color of the luminous pupil in that the light was reflected by the choroidal blood vessels.

In 1846 a most important communication was published by Cumming in the Medico-Chirurgical Transactions. He showed that every healthy human eye can be made luminous. The person is placed at a definite distance from a light, this distance varying with the intensity of the light, and the observer places himself close to the straight line between the course of light and the eye examined. He showed that the luminosity of the

* At the Meeting at Atlantic City, Drs. Harry Friedenwald and Casey Wood were appointed a committee to arrange exercises and an historic exhibit for the St. Paul Meeting, to commemorate the 50th anniversary of the invention of the ophthalmoscope.

pupil varied with the intensity and the distance of the light and that when the distance was decreased to a few inches it vanished because the light is cut off by the head of the observer. He reported a number of cases in one of which only could he not produce the luminous appearance. In this case the pupils were very small. It was Cumming who first suggested and used this method for examination of the porterior portion of the eyeball, making the endeavor to draw conclusions concerning the retina as well as the media from the conditions of the reflex.

About this time Bruecke's attention was directed to this subject by accidentally observing a young man's eyes become luminous, and in 1847 he invented independently the same method as that of Cumming. He also mentioned an observation of Erlach, that eyes could be made luminous by the bright light reflected from his concave spherical spectacle glasses, a fact which Bruecke substantiated by experiments on others.

About the same time an instrument was constructed by Babbage, of calculating machine fame, which almost made this scientist take Helmholtz's place as the inventor of the ophthalmoscope. Almost! The account was not published until three years after Helmholtz's invention had been made and appeared in an article by Wharton-Jones[2] in which he reviewed Helmholtz's publication and several that appeared subsequently. He says: "It is but justice that I should here state, however, that seven years ago Mr. Babbage showed me the model of an instrument which he had contrived for the purpose of looking into the interior of the eye. It consisted of a bit of plain mirror, with the silvering scraped off at two or three small spots in the middle, fixed within a tube at such an angle that the rays of light falling on it through an opening in the side of the tube were reflected into the eye to be observed and to which one end of the tube was directed. The observer looked through the clear spots of the mirror from the other end. This ophthalmoscope of Mr. Babbage we shall see is in principle essentially the same as those of Epkens and Donders, of Coccius and of Meyerstein, which themselves are modifications of Helmholtz."

What a pity that Babbage did not devote a little more time to this invention! He could hardly have missed being the inventor of an instrument whose value is a thousand times greater than that of all the calculating machines ever invented.

To return a moment to another aspect I must point out that as early as 1704, Mery observed that the fundus of cats' eyes became distinctly visible when the animal was placed under water. LaHire explained this phenomenon five years later: "When a normal eye is in the air the rays of light issuing from a point in the fundus are so refracted that they leave the eye in parallel lines. For this reason we should be able to see the point in the fundus clearly, for parallel or almost parallel rays always produce a distinct perception in our eye; nevertheless, we do not see the object. On the other hand, when the eye is under water the rays leaving the eyeball diverge and in passing from the water into the air they are made to diverge still more. The result is that whereever we place our eye these divergent rays give us a clear picture of the point in the fundus from which they emerge." He does not attempt to explain the problem why parallel rays emerging from an eye exposed to the air can not be seen.

LaHire's profound statement was too advanced; others receded from it and it required almost 150 years before the problem was solved.

In 1851[3] a little pamphlet was published by Helmholtz, then a young professor of anatomy and physiology in Königsberg, under the title of "Beschreibung Eines Augen-Spiegels zur Untersuchung der Netzhaut im Lebenden Auge." In this he demonstrated the fundamental facts that *the rays pass out of the eye in the same lines in which they have entered and that they can be made to form a distinct image in an observer's eye.* He explains Cumming's and Bruecke's observations as being due to the fact that the eye is not exact focus for the light and thus rays pass out by lateral dispersion. But what was most important he added the *practical* to the *theoretical* and invented an instrument with which the details of the retina could be examined. He described the ophthalmoscopic appearance of the retina, calculated the enlargement under which it is seen, pointed out the value of the instrument as a measure of the refraction and of the accommodative changes of the eye. His short monograph was thorough and complete and gave into our hands a means of examination of which no one had yet dreamed. In his modest way Helmholtz thus prophesies its usefulness:

"I do not doubt, judging from what can be seen of the state of the healthy retina, that it will be possible to discern all its diseased conditions, so far as these, if seated in other transparent parts such as the cornea, would admit of diagnosis by the sense of sight. Distension or varicosity of the retinal vessels will be easily perceptible. Exudations in the retinal substance, or between the retina and choroid, will be seen precisely as in the cornea, by their brightness upon a dark ground. . . . Fibrinous exudations, usually much less transparent than the ocular media, will, when lying upon the fundus, considerably increase its reflection. I believe also that turbidity of the vitreous body will be determined with greatly increased ease and certainty. In brief, I do not consider it an overstrained expectation that all the morbid changes of the retina or of the vitreous body that have been found in the dead subject will admit of recognition in the living eye; an expectation that appears to promise the greatest progress in the hitherto incomplete pathology of the organ."

It will not be out of place to tell the story of the invention of the instrument in Helmholtz's words: "I was endeavoring to explain to my pupils the emission of reflected light from the eye, a discovery made by Bruecke, who would have invented the ophthalmoscope had he only asked himself how an optical image is formed by the light returning from the eye. In his research it was not necessary to ask it, but had he asked it, he was just the man to answer it as quickly as I did and to invent the instrument. I turned the problem over and over to ascertain the simplest way in which I could demonstrate the phenomenon to my students. It was also a reminiscence of my days of medical study that ophthalmologists had great trouble in dealing with certain cases of eye disease, then known as black cataract. The first model was constructed of pasteboard, eye lenses, and cover glasses used in the microscopic work. It was at first so difficult to use that I doubt if I should have persevered, unless I had felt that it must succeed; but in eight days I had the great joy of being the first who saw before him the living human retina."

How peculiarly applicable are the lines of Weir Mitchell:

How keen the mind-thrill of delight
When some new sun illumes our lessening night,
And problems, dark for many a weary year,
Shine, simply answered—luminous and clear.

THE HELMHOLTZ OPHTHALMOSCOPE.

This interesting instrument, of which there are five models in the exhibit, consists of a little metallic box with plates set at an angle which act as reflectors. In the back of the instrument correcting lenses were placed to neutralize the refractive and accommodative conditions of the eye examined and of the eye of the observer. In the early cases these lenses were all concave[4] and ranged from —12 in. to —6 in. which Helmholtz[5] says "suffice for all conditions of the accommodation." He himself usually used —10 in. spherical glass to examine normal eyes, and for high degrees of myopia he combined two concave glasses.

For the purpose it was invented, this instrument is optically perfect, and Helmholtz not only recognized all the possibilities of pathological discovery which it offered but he also saw the value that it possessed for the determination of the refractive condition of the eye examined.

"One can easily convince himself objectively with the ophthalmoscope of the presence and the degree of short-sightedness and of far-sightedness." His method consisted in having the observer first determine the concave glass required for examination of a normal eye and subtracting this constant from the glass required for the examination of other eyes, a method which we all use in teaching beginners.

No instrument used in medicine was destined to undergo a greater number of changes and modifications than the ophthalmoscope. In the same year in which Helmholtz's monograph appeared, Epkens constructed a plain silvered mirror with the silvering removed at a spot in the center.

RUETE'S OPHTHALMOSCOPE.

In 1852 Ruete[6] announced the invention of an ophthalmoscope by means of which the fundus was rendered visible in an inverted image by what has since been known as the indirect method. It is true that Helmholtz discussed the question of examining the fundus in this manner by means of convex spheric glasses placed between the observer and the observed eye, but he placed his lenses behind the ophthalmoscope, between the reflecting surface and the eye of the observer. After making careful and interesting calculations, he described that "in experiments with such lenses the proper position of the instrument for the examination of the retinal image was very much more difficult to find and to hold." Helmholtz himself therefore only used the direct method.

Ruete's instrument, which through the kindness of Dr. B. Joy Jeffries, I have the good fortune of being able to show in the exhibit, is most curious and interesting. As reflector, Ruete introduced a concave perforated mirror placed at a distance from the observed eye and he interposed between this mirror and the eye examined one or two spheric convex lenses.

Ruete therefore deserves the credit for having introduced a practical method for examining the inverted image of the retina and too great praise can not be bestowed upon him. Helmholtz himself said of it: "I consider the invention of his instrument an important advance in the examination of the fundus." In his article Ruete describes a few pathological cases examined by means of his instrument; these, so far as I am aware, are the first on record.

Ruete's paper soon called forth another from Helmholtz[7] in which he explained the theory of the indirect method and described his "simplest ophthalmoscope" which required nothing but a screen, a candle and a convex spheric lens.

The observer's head is placed close to the candle and shaded by a screen and the lens is held near the eye examined. This and Ruete's method he showed were practically identical. Helmholtz also mentioned an addition made to his original instrument by Rekoss, an instrument-maker of Königsberg. Rekoss placed two discs which had lenses inserted in their periphery in the instrument; by turning these the lens desired could be obtained. This device,[8] the Rekoss disc, has been used in most modifications of the instrument.

In 1853[9] Coccius invented an instrument which consisted of a plain mirror upon which the light was thrown through a convex spheric glass. The mirror and the lens were firmly attached to each other, but their distance from each other admitted of change. In this manner the plane mirror acted as a concave mirror of variable focus. (Several forms of this mirror are found in the exhibit.)

Eduard Jaeger[10] in 1854 modified the instrument of Helmholtz. The three plates of unsilvered glass were retained for the direct method, but these could be replaced by a concave silvered mirror for the inverted image; thus he made a combination of the Helmholtz and the Ruete instruments. In 1871 Dr. George Strawbridge[11] of Philadelphia further modified this instrument by adding three Rekoss discs which were interchangeable.

We have now seen that plain and concave mirrors were used. In 1854 Zehender[12] used a convex mirror with a convex spheric glass attached in the same manner as that of Coccius. But this does not exhaust the mirrors used. Lenses were employed, both convex and concave and concavo-convex of varying strengths, which were silvered on one side and thus acted as both correcting lenses and mirrors. In the exhibit you will find several such mirrors made of silvered biconvex lenses and known as Burrow's[13] ophthalmoscopes. All of the instruments thus far mentioned are found in the exhibit.

Prisms were employed as mirrors by Ulrich, Froebelius, Meyerstein, Coccius and Zehender,[14] but I have been unable to obtain any of these forms.

A very simple ophthalmoscope was early invented by Liebreich, first in the form of a concave metallic mirror, later of perforated glass. You will find a long series of these in the exhibit. Liebreich also invented an instrument in which the various parts were fixed and the head of the patient likewise made stationary.[15]

Follin also constructed an instrument in which the mirror and the collecting lens were stationary—and Galezowski[16] invented one in which the lens and the mirror were placed at the two ends of a telescopic tube. The stationary instruments were especially intended as demonstrating ophthalmoscopes. Special demonstrating ophthalmoscopes were also constructed by Schweigger,[17] in which the rays returning through the opening in the mirror were in part allowed to proceed to the observer's eye, in part deflected by a prism to the eye of another to whom the demonstration was to be made. Graefe and Peppmueller[18] described an instrument for the same purpose in which a small piece of mirrored glass was placed on the mirror at the side of the

opening.[19] All of these instruments are found in our exhibit. We have also a Schoeler[20] demonstrating ophthalmoscope in which a minute mirror is placed obliquely behind the opening of the ophthalmoscopic mirror.

Numerous attempts were made to obtain a binocular view of the fundus. A number of modifications of Giraud Teulon's binocular ophthalmoscopes are found in our exhibit.

Of the half dozen electric light ophthalmoscopes that have been invented I am only able to present one model, that of Schweigger.

### REFRACTION OPHTHALMOSCOPES.

The first to invent a refraction ophthalmoscope was Helmholtz when he added the Rekoss discs to his instrument. This same device has been used in numerous forms of instruments.

No one has contributed more to perfecting this than our fellow-countryman, Loring. I am very fortunate in being able to show the various steps which led up to the present instrument, which is known to you all. Loring first inserted three interchangeable discs behind the mirror, later he placed all the lenses in one disc making a double circle of glasses and by moving the disc up and down he could place either circle before the eye. Finally he secured all the strengths necessary by means of a single disc and a super-added segment. Wadsworth of Boston first suggested a mirror set obliquely before the observer, so as to enable the latter to look directly through the lenses and not at an angle. This instrument we have in our exhibit, loaned by Dr. Wadsworth. Loring adapted the same modification in an ingenious way by cutting off a segment at one edge of his round mirror and still later he found that he was able to take off a segment on each side and thus came about the modern Loring tilting mirror.

Another method of placing a great number of lenses in an instrument was invented by Cooper of London. He formed a long chain of lenses sliding in a groove. Morton modified this and his instrument is also in the exhibit.

A number of instruments have the correcting lenses arranged in a line and placed in a narrow metal plate which slides in a groove. Several are in the exhibit.

I should like to devote a little time to the consideration of skiascopy but time will not permit, and I shall only call your attention to a number of varied mirrors for this purpose to be found in the exhibit. Nor dare I spend any time on ophthalmoscopic photography.

The days of invention of new ophthalmoscopes are not over. In 1900 two important instruments were invented, one a demonstration ophthalmoscope by Thorner, the other an electric light ophthalmoscope by Oscar Wolff. I regret that we were unable to obtain these for the exhibit.

It would have been impossible to make this collection complete. But a sufficient variety is shown in the 140 instruments making up the exhibit to afford a good demonstration of the development of the ophthalmoscope and of its many modifications. All have been collected in this country, and I trust that the section will agree with me in urging the Surgeon-General of the United States to arrange a permanent historic exhibit at the Army and Navy Museum in Washington. Many of these instruments are already very rare and will otherwise be lost in a few years. I feel confident that many who have loaned their instruments to us will be willing to loan them, and some, perhaps, to give them, to the Surgeon-General's Museum.

In conclusion I desire to give thanks to Dr. Casey A. Wood, my colleague on the committee and to the following gentlemen who have kindly loaned their instruments:

LOANERS.

Dr. B. Joy Jeffries, of Boston (eight instruments).
Dr. Charles H. Williams, of Boston (eight).
Dr. Hasket Derby, of Boston (six).
Dr. D. W. Hunter, of New York (six from the collection of the late Dr. Noyes).
Drs. F. M. Chisolm and Herbert Harlan, of Baltimore (five).
Dr. Casey A. Wood, of Chicago (four).
Dr. William Thomson, of Philadelphia (four).
Dr. Conrad Behrens, of Philadelphia, Wills Eye Hospital (four).
Dr. Webster Fox, of Philadelphia (three).
Dr. Charles H. May, of New York (two).
Dr. Lucian Howe, of Buffalo (two).
Dr. Jackson, of Denver (two).
Dr. Dudley Reynolds, of Louisville (two).
Dr. Callan, of New York (two).
Dr. Edward Morrow, of Canton, Ohio (one and Montnieja's Atlas).
Dr. Flemming Carrow, of Ann Arbor, Mich. (one).
Dr. C. Barck, St. Louis (one).
Dr. Hermon Thomas, of Philadelphia (one).
Dr. Alex. Stirling, of Atlanta, Ga. (one).
Dr. K. Koeller, of Pittsburg (one).
Dr. C. M. Culver, of Albany, N. Y. (one).
Dr. Samuel D. Risley, of Philadelphia (one).
Dr. Shallus, of Philadelphia (one).
Dr. Jessop, of Philadelphia (one).
Dr. Zimmerman, of Philadelphia (one).
Dr. G. Edgar Dean, of Scranton, Pa. (one).
Dr. William C. Bane, of Denver, Colo. (one).
Dr. H. B. Young, of Burlington, Iowa (one).
Surgeon-General's Museum, through Dr. Caloni DeWitt (one).
Dr. Brown Pusey (seven), and Chambers, Inskeep & Co., Chicago.

I feel that Messrs. Tiemann & Co., of New York, Messrs. Bonschur and Holmes, of Philadelphia, and Mr. Alex. Shaw, successor of Mr. H. W. Hunter, of New York, and Mr. E. B. Meyrowitz, of New York, deserve our special gratitude for the interest and pains they have taken in collecting old instruments. Messrs. Tiemann & Co. sent twelve instruments, Messrs. Bonschur & Holmes collected fourteen and added four more from their stock, and Mr. Alex. Shaw sent two made by Hunter.

REFERENCES.

1. There is doubtful mention of it by Aristotle, and Pliny says: "The eyes of nocturnal animals, such as cats, are brilliant in the darkness." See Mauthner's Ophthalmoscopie, p. 2.
2. British and Foreign Medical Review, October, 1854.
3. From certain statements in Michaelis' "Life of v. Graefe" (Berlin, 1877, p. 34), it would appear that the invention was really made in 1850.
4. Since higher degrees of hypermetropia than 4 Ds are not of common occurrence, Helmholtz required no convex spheres.
5. Nederl. Weekblad voor Geneeskundigen, Dec. 21, 1851.
6. Der Augenspiegel und d. Optometer, Göttingen, 1852.
7. Vierordt's Archiv, 1852, p. 827.
8. Each disc contained four lenses: one those from 6 in. to 9 in., the other those from 10 in. to 13 in., all concave.
9. Ueber d. Anwendung d. Augenspiegel, Leipzig, 1853.
10. Ueber Staar und Staar-operationen, Vienna, 1854.
11. Amer. Ophth. Soc., 1871, p. 120.
12. Graefe's Arch. f. Ophth., vol. i, pt. I, p. 121.
13. Arch. f. Ophth., iii. 2, p. 68, 1857.
14. See Graefe Saemisch Handbuch, vol. iii, p. 155.
15. Arch. f. Ophth., vol. i, 2, 1854.
16. Acad. de Med., Jan., 1862.
17. Berl. Klin. Woch., 1871, p. 585.
18. 50 Versammlung Deutscher Aerzte und Naturforscher, 1877.
19. Most all are familiar with the device as adapted by laryngologists to demonstrate the larynx and known as Noltenius' demonstrating instrument.
20. Jahresbericht d. Augenklinik for 1876, pp. 51-56.

## HERMANN VON HELMHOLTZ—THE INVENTOR OF THE OPHTHALMOSCOPE.*

CASEY A. WOOD, M.D.
CHICAGO.

*Vormals im Leben ehrten wir dich, wie einen der Goetter,*
*Nun du todt bist, so herrscht über die Geister dein Geist.*

Quite apart from the interest that is naturally excited by the life-story of the great scientist who invented the instrument that revolutionized the science and art of ophthalmology, there are, at least, two reasons why this gathering should be especially interested in the life of Hermann Ludwig Ferdinand Von Helmholtz. In the first place it was as a student and practitioner of medicine that he entered upon those studies that carried his name and spread his fame throughout the world of science. Then, in the second place, there coursed in his

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veins the bluest of American blood. His mother was the daughter of a Hanoverian artillery officer named Penne, a direct descendant of William Penn. It is more than possible that the calm, thoughtful spirit which distinguished all the actions of this truly great man was largely due to the Quaker element in his character. He was born at Potsdam, near Berlin, on August 31, 1821—the son of Ferdinand Helmholtz, a teacher in the gymnasium, and a man of unusual intelligence and culture. The subject of this sketch had, on the whole, a quiet uneventful life. He was not given to talking much about himself even to his most intimate friends, although he occasionally broke through his natural reserve in this respect. In 1891, when he replied to a toast in honor of his seventieth birthday, he opened his heart to his hearers, and we are indebted to this festive occasion for much that we know of the private life and opinions of the speaker. Although by no means robust as a boy, his mind always showed great activity. He tells us that it was while playing with a set of wooden blocks that his attention was first drawn to mathematical problems. He had the good fortune to possess a father who encouraged him in the study of general literature, and although he acquired languages with great difficulty, he was very fond of poetry, and at an early age read Homer, Virgil and even Arabic tales and verse. He also had the advantage of listening to the discussions, philosophical and other, that took place in his father's house, and made an early acquaintance with the metaphysics of Kant and Fichte. As he grew older he threw off the physical disabilities that affected his early youth and began to take long walks through the country, first in the beautiful environs of Potsdam and later through Europe, that formed, with the delightful and profitable companionship of his father and other friends, one of the most fruitful experiences of his whole life. Du Bois Reymond asserts that these excursions, as well as his later mountaineering experiences in the Alps, had for him something more than a hygienic value. We know that the solution of many a problem came to him while engaged in these holiday recreations. For example, it was while watching the troubled sea at Cap d'Antibes that he measured the velocity of the wind with an anemometer, counted the number of waves on a given surface of sea and thus obtained the necessary data for his conclusions on the relation of wind velocity to wave lengths.

Helmholtz was soon attracted by the study of physics as opposed to mere abstract investigation of algebra, geometry and trigonometry, and although he regarded mathematics as a *sine quâ non* in physical research, he was essentially a student of physical phenomena. If there is one thing that characterizes his life-work it is a passionate desire to know things as they really are and to study them especially from their physical side. This zeal became more pronounced the older he grew, and we know that as an experimenter he had no superior and few equals. While his class in the gymnasium was reading Greek and Latin authors, generally regarded as a severe task by the young physicist, he was surreptitiously working out optical problems and illustrating the passage of light rays through the telescope. His father was a man of small means and could not afford to purchase expensive apparatus for his son; hence the latter was obliged to utilize in his primitive investigations spectacle glasses and a small lens used for examining botanical specimens.

In 1838 he left the gymnasium to attend the University at Berlin with the following prophetic testimonial from the rector: "His exceptionally calm and reserved disposition is combined with great intellectual enthusiasm. In it we recognize an excellent combination of clear and prudent understanding and deep good nature. His manners bear witness to a carefully preserved, exceptionally pure, and genuine childlike innocence. These peculiarities, along with the richness and power of his mental development, give an agreeable and captivating impression, and justify the hope that such a ground-soil of intellectual life will only bring forth the best of fruits."

It is difficult to realize from what we know of his maturer years, that Helmholtz had no extensive training in mathematics during his youth. It appears, however, that he recognized the necessity of a thorough knowledge of this branch as an adjunct to his study of physics, and he applied himself to it with the quiet persistence that also marked his successful acquirement of foreign languages. Those of us who remember the speech he made at the dinner in his honor at Chicago in 1893 will scarcely believe that he was not a ready linguist.

Helmholtz was one of four children, and the difficulties which Ferdinand Helmholtz encountered in supporting his family made it necessary that Hermann should earn his own livelihood at an early age. He was advised to study medicine and, with the assistance of a relative, Surgeon-General Mursinna, in 1838, entered as a bursar the Royal Medical-Chirurgical Friedrich-Wilhelm Institute in Berlin. Here a free medical education was given the student on condition that he afterwards become a surgeon in the Prussian army. He attended the usual courses in the Medical Department of Berlin University, was attached for a time to the Charité Hospital, finally obtained his diploma and became an army surgeon.

In a lecture delivered in 1877 on "Thought in Medicine," a lecture which I respectfully commend to the attention of all who have not carefully read it, he speaks of this period of his life. "My own original inclination," said he, "was towards physics; external circumstances obliged me to commence the study of medicine. It had, however, been the custom of a former time to combine the study of medicine with that of the natural sciences, and whatever in this was compulsory I must consider fortunate; not merely that I entered medicine at a time in which any one who was even moderately at home in physical considerations found a virgin field for cultivation, but I consider the study of medicine to have been that training which preached more impressively and more convincingly than any other could have done, the everlasting principles of all scientific work; principles which are so simple and yet are ever forgotten again; so clear and yet always so hidden by a deceptive veil."

It was during this time that he became the associate—the fortunate associate—of a number of other students in Berlin whose names are now and ever will be as household words to the medical man—Johannes Müller, Du Bois Reymond (an old school friend) Brücke, Gustav Magnus, Kirchoff, Virchow and many others of that brilliant group who, with himself, became the founders of the Berlin Physical Society. The main function of this association was, as you know, to consider physiological and other problems from the physical rather than from the metaphysical side.

While engaged in his usual medical duties, Helmholtz had, as he tells us in "Thought in Medicine," an attack of typhoid fever, for which he was treated gratuitously in the Charité. As his allowance for board was in the

meantime continued, he found himself at the end of his convalescence in the possession of a small sum of money, which he invested in a compound microscope. Do not imagine for a moment that this was one of those expensive and effective instruments with which every medical college is nowadays liberally supplied. In Helmholtz's youth microscopes were rare, and microscopical research by the student still rarer. Yet with this primitive instrument he demonstrated in the nervous ganglia of leeches that the nerve fiber or its axis cylinder always originates from the polar process of the nerve cell, and this investigation formed the basis of that inaugural thesis (De Fabrica systematis nervosi Evertebratorum) which at the age of 21 he presented on graduation. Sometimes we are led to believe, and our splendidly equipped laboratories in a certain sense reflect this belief, that it is a particular kind of tool that plays the important part in the work of original research, without a reckoning of the workman, just as occasionally we lose sight of the "man behind the gun" in estimating the probable value of the firearm.

It is not the purpose of this paper to follow, from these beginnings, Helmholtz's triumphant progress through the world of physical science. Even a short account of the additions which he made to our knowledge of chemistry, physiology, mechanics, hydrodynamics, optics, acoustics, electricity, color and mathematical physics generally, not to mention their practical application in the invention of instruments of precision, would more than occupy the time at my disposal. McKendrick says of him that from 1842, when his thesis was published at 21 years of age, until 1894, when he died, papers flowed from his pen in almost uninterrupted succession. With the exception of the year 1849 he always published at least one important contribution, so that no fewer than 217 distinct papers and books represent his labors. He lived in Berlin from 1842 to 1847, when he became, at the age of 29, professor of physiology at Königsberg. There he remained until his 35th year (in 1856) when he was promoted to the chair of physiology in Bonn. In 1859 he was made professor of physiology in Heidelberg. When 50 years old he was called to occupy the chair of physics in Berlin, and there he remained until his death. His early years in Berlin were occupied as assistant physician at the Charité and as assistant surgeon in the Red Hussars regiment at Potsdam. He never had a private medical practice; indeed, we know that every moment he could spare from his public medical duties was devoted to physical science. Eventually Alexander von Humboldt, recognizing his capacity, asked that he be relieved from all military duty and obtained for him several minor positions where he could devote most of his time to the study of anatomy and physiology.

As a student, some fifteen years ago, in the Physiological Institute of Berlin University, it was my good fortune to have been thrown in contact with many of the teachers that have made that institution famous—with Helmholtz, Du Bois Reymond, König, Fritsch, Gad and others of the same school. No one could fail to be impressed by the spirit of earnestness, simplicity and devotion to science for its own sake that characterized the labors of these brilliant investigators. I can not refrain from mentioning a circumstance illustrative of this idea, that is familiar to most of you. At intervals the students and teachers of the Institute were invited for a social gathering to some convenient place where all topics imaginable—but especially scientific subjects—were discussed. One in particular I remember at which Helmholtz and Du Bois Reymond were present. It was called, if I recollect aright, in the invitation posted at the Institute, *eine Bier-microscopische Versammlung*, a term fairly descriptive of the entertainment, because we wore our everyday clothes, drank beer, ate sandwiches, examined microscopical slides, listened to animated scientific discussion and enjoyed what then, and what still seems to me to be the very best society in Germany. Probably a corresponding entertainment would be represented in some other countries by an orchestra behind a row of palms, floral decorations, ten courses of indigestible imitations of French cooking and all the "guests" in their "dress" suits and on their finest behavior. Whenever I attend a medical "banquet" I can not help breathing a sigh for the simple (primitive, if you will) social joys of the German University.

Something, by the way, ought to be here said about the important work which Helmholtz did in perfecting the microscope—in supplementing the labors of Abbé of Jena in this direction. Among many other things he showed us how to find and measure the angle of aperture, and he proved that because of the light-dispersion at the margins of minute objects none of these can be seen that are of a smaller diameter than 1/5000 of a millimeter.

In some form or other and at some time or other the great problems relating to the forces that play in us and about us occupy one's attention, and Helmholtz endeavored to solve some of these great questions (so far as physical research can ever solve them) in his famous essay, "Ueber die Erhaltung der Kraft." Although the principle of the conservation of energy is now so universally accepted as to be considered almost axiomatic, and though it was dimly realized by Newton, Descartes and others, this paper of Helmholtz, read before the Physical Society, aroused much criticism, and it was actually refused publication in the well-known *Annalen* of Poggendorff on account of its doubtful value!

In 1849, when Helmholtz was 29 years of age, he married Frl. Olgo von Velten of Potsdam, who died at Heidelberg in 1859. He had by this marriage two children, a son, an engineer now living in Munich, and a daughter who became the wife of Professor Branco, the geologist.

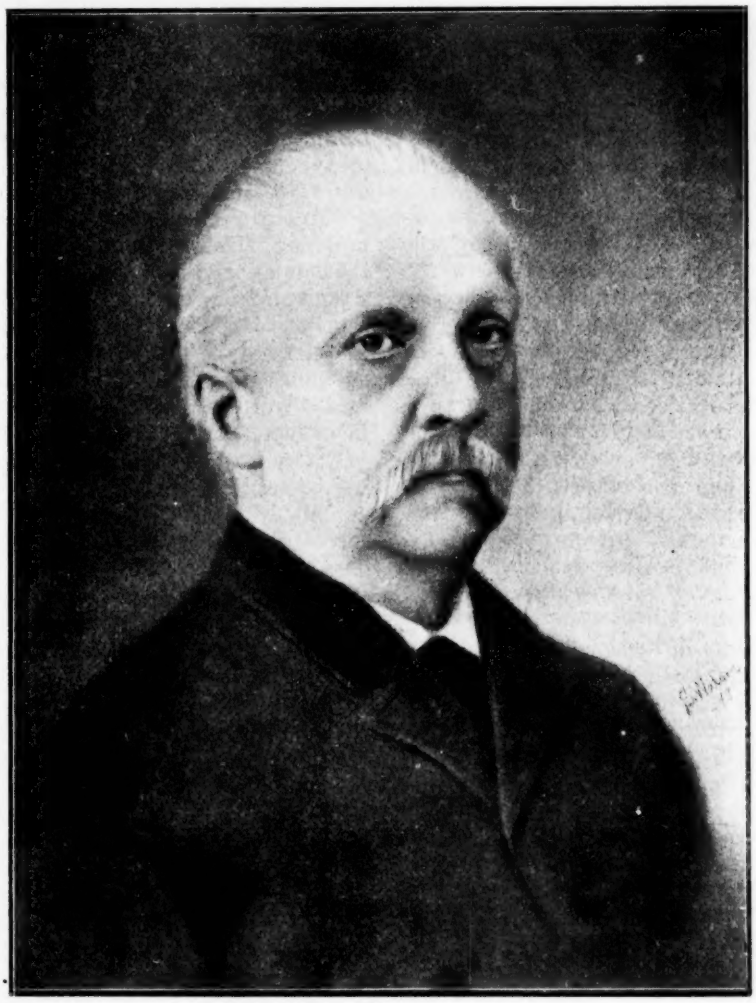
In 1861 he entered upon a second marriage with Frl. Anna von Mohl, a lady belonging to a Wurtemberg family of high social position, who also bore him two children, a son and a daughter. Robert, the elder, died in 1889 after he had given evidence of having inherited many of the mental qualities of his distinguished father. It is said that Helmholtz never entirely recovered from this blow. The daughter married the son of Werner von Siemens, the well-known electrician.

Helmholtz was an accomplished musician and no mean vocalist. The pleasures of congenial society, with music, formed his principal recreation. It may be said, in passing, that the splendid grand piano upon which he loved to play was presented to him by the house of Steinway of New York in recognition of his services to music.

The answer which the devotee of pure science is likely to give to the objection raised by the so-called "practical" man that there is little value to be attached to merely theoretical investigations, might take the form of a reference to the invention of the ophthalmoscope which we may consider the most beneficial of all the works of Helmholtz. We have the testimony of the inventor himself that its origin was the outcome of a desire to exhibit a purely physiological phenomenon to his students in Königsberg. Its application in the diagnosis and treat-

ment of disease was really an after-thought. As you are well aware, and as the labors of my colleague have enabled us so well to appreciate in the fine exhibits his industry has set before us, the first ophthalmoscope was a very crude instrument. For that matter, so also were the forerunners of the modern myograph, phakoscope and ophthalmometer, all invented at Königsberg by this versatile genius. As a further example of Helmholtz's universal study of men and things, Du Bois Reymond tells us that as a recreation he was in the habit of watching through a telescope the walking methods of the Königsberg citizens so that he might compare his observations of human locomotion with those of Weber.

In Bonn he wrote the well-known monograph on the ossicles and membrana tympani that forms so large a portion of modern physiological acoustics, just as his researches in physiological optics contributed so much to our knowledge of optical problems.



PROF. H. VON HELMHOLTZ.

In 1864 he delivered the well-known Croonian lecture "On the Normal Motions of the Human Eye in Relation to Binocular Vision." His studies of the horopter and stereoscopic vision led to the invention of the telestereoscope which, as you well know, is an instrument where two images of distant objects are seen as if the foveæ were much more widely separated than normal.

Helmholtz was a sufferer from a form of hay fever that greatly interfered with his enjoyment of the *Ferienzeit*. As no one appeared to be able to relieve him, and as little was then known of the etiology of this strange disease, he, with his usual energy, attempted to discover its cause. A full account of these researches will be found in the 46th volume (1869), page 67, of Virchow's Archiv in an article by Professor C. Binz of Bonn, entitled "Pharmakologische Studien ueber Chinin." Having read the experiments of Binz with quinia sulphate on the organisms supposed to be responsible for the symptoms, Helmholtz used a nasal wash (1:800) of this remedy for four or five years and finally announced himself as cured. The following account of the attacks, their etiology as the sufferer himself worked it out, and the means he adopted for their cure, show what an admirable clinician he might have made. The English account is given in *Nature*, vol. x, page 26, and is entitled "An Experimental Observation on Hay Fever," being a letter to Professor Tyndall from Professor C. Binz in Bonn, and forwarded by the former for publication.

"I have suffered as well as I can remember since the year 1847 from the peculiar catarrh called by the English 'hay fever,' the specialty of which consists in its attacking its victims regularly in the hay season (myself between May 20 and the end of June), that it ceases in the cooler weather, but on the other hand quickly reaches a great intensity if the patients expose themselves to heat or sunshine. An extraordinary violent sneezing then sets in, and a strongly corrosive thin discharge with much epithelium is thrown off. This increases after a few hours to a painful inflammation of the mucous membrane and of the outside of the nose, and excites fever, with severe headache and great depression if the patient can not withdraw himself from the heat and the sunshine. In a cool room, however, these symptoms vanish as quickly as they come on, and there then only remains for a few days a lessened discharge and soreness, as if caused by the loss of epithelium. I remark, by the way, that in all my other years I had very little tendency to catarrh or catching cold, while the hay fever has never failed, during the twenty-one years of which I have spoken, and has never attacked me earlier or later in the year than the time named.

"The curious dependence of the disease on the season of the year suggested to me the thought that organisms might be the origin of the mischief. In examining the secretions I repeatedly found in the last five years certain vibrio-like bodies in it which at other times I could not observe in my nasal secretions. They are very small and can only be recognized with the immersion lens of a good Hartnack microscope.

"It is characteristic of the common isolated single joints that they contain four nuclei in a row, of which two pairs are more closely united. The length of the joints is 0.004 mm. Upon the warm objective-stage they move with moderate rapidity, partly in mere vibration, partly slowly backward and forward in the direction of their long axis; in lower temperatures they are inactive. Occasionally one finds them arranged in rows upon each other or in branching series. Observed some days in the

moist chamber they vegetate and appear somewhat larger and more conspicuous than immediately after their excretion. It is to be noted that only that kind of secretion contains them which is expelled by violent sneezings; that which drops away slowly does not contain any. They stick tenaciously enough in the lower cavities and recesses of the nose. I made a neutral solution of sulphate of quinin (1 to 800) which produced moderate irritation of the nasal mucous membrane. I then lay flat on my back, keeping my head very low, and poured with a pipette about 4 c.c. into both nostrils. Then I turned my head about in order to let the fluid flow in all directions. The desired effect was obtained immediately and remained for some hours so that it was sufficient to repeat the treatment only three times daily. I then found no vibrios in the secretion. After continuing this treatment for some days the symptoms disappeared completely, but if I leave off they return till toward the end of June."

Helmholtz's experiments began in the summer of 1867 and in 1872 he told Binz that his fever was quite cured and that several others had, by his advice, tried the same treatment with success.

Although we now have reason to believe from the observations of Blakely, Bostock and Bosworth that true hay fever is the result of the irritation set up by the pollen of certain flowering plants in individuals having a neurotic idiosyncrasy against them and that the organisms seen by Helmholtz were probably fragments of spores containing the fovilla of the pollen cells the clinical observations were accurate, the description of the disease eminently truthful, and the methods of examination were in accord with the teachings of modern science.

In 1877 Werner von Siemens founded the Physico-Technical Institute at Berlin, and Helmholtz, his lifelong friend, was chosen as its first Director. This position furnished him with some rest from teaching, but he still continued to deliver lectures twice a week in the University.

Five years after the demise of his son, Helmholtz sustained a further loss in the death of his favorite pupil, Heinrich Hertz, best known as the discoverer of electromagnetic or "Hertzian" waves. We may understand something of his grief from the following words which Helmholtz wrote but a few months before his own death: "The news of the death of this favorite of genius was a severe shock to all who recognize the development of the individual, both as regards mental capacity and the victory of the soul over the passions and opposing powers of nature. Endowed with the rarest gifts of mind and character, he has in his short life reaped a harvest in a field in which many of the most talented of his scientific brethren had labored in vain. In classical times his death would have been regarded as a sacrifice to the envy of the gods. Nature and fate co-operated in his development. In him we found all the qualities required for the solution of the hardest problems in science. . . . Heinrich Hertz appeared to be predestined to disclose new vistas into the unpenetrated depths of nature; but all these hopes were crushed by the insidious disease which slowly and unceasingly crept on until it destroyed the life we esteemed so valuable. I myself deeply feel the loss, as I have always looked on Hertz as the one of all my students who had entered into the innermost circle of my scientific thoughts, and the one in whose ultimate development and success I dared to place my surest hopes."

In 1894, the year of his death, appeared a new edition of his *opus magnum,* the "Handbuch der Physiologischen Optik," a fitting crown to a long and successful life.

There is a matter to which the particular attention of this audience may well be drawn and that was the habit of Helmholtz to deliver popular lectures. Here was a man whose whole time was occupied in considering the most abstruse problems, whose every day teaching involved the use of terms intelligible only to minds with a special training, and yet he did not consider it outside his province to lay before the public the results of his own scientific experience and that of others. When Tyndall's lectures were published in German, Helmholtz wrote the preface and maintained that such popular presentations of scientific subjects were calculated to stimulate thought and to awaken an interest in scientific work. There can be no doubt but that his own public explanations of the phenomena of sight, of hearing, of the theories of music, of color and of the art of painting, may serve as models for popular lectures of all sorts. One may venture the assertion that medical topics discussed before public audiences in a tactful manner are not only useful in combating many ignorant ideas entertained by otherwise intelligent people, but they go a long way towards preserving these same persons from the machinations of the charlatans and panacea-vendors that infest the community. Do we not owe it to the public who, in a sense, are our medical wards, to provide them with authoritative teaching in physiology and pathology? If the elementary mysteries of biology and pathology are not publicly expounded by worthy representatives of the medical profession, it is no great wonder that the laity investigate them, to their hurt, elsewhere.

Reference has already been made to the mountaineering expeditions of Helmholtz. These strongly remind one of Tyndall. If one reads, first, the Helmholtz lecture on *"Eis und Gletscher"* and then Tyndall's "Glaciers of the Alps," or his "Forms of Water," he will surely feel that they were written by the same kind of man in an atmosphere that stimulated while it satisfied not only the inquiry into material, but into those immaterial things that both approached with a reserve tinctured by reverence.

Honors of all kinds flowed in on Helmholtz during the latter part of his life. He was ennobled by the Emperor William I, and the present monarch sent him an autograph letter on the celebration of his 70th birthday. This event was considered not only of national but of international importance. The Kings of Sweden and Italy, the Grand Duke of Baden and the President of the French Republic, conferred upon him the insignia of various orders. He was the recipient of many university degrees, while academies and learned societies the world over sent congratulatory addresses. A Helmholtz medal, to be awarded for distinguished services to science, was struck in his honor. At a banquet shortly afterwards, Helmholtz had the pleasure of presenting the first medal to his friend, Du Bois Reymond, after a speech so characteristic of the man that I cannot refrain from quoting a portion of it:

"It is the greatest honor men of science could pay to me to connect my name with this medal, which will stamp the progress of science in future times. Science, to modern humanity, proclaims peace. The scientific man does not work for his own welfare, but for that of his nation, and for the whole of humanity, especially for those who are sufficiently educated to enjoy the fruits of science. You desire to associate my name with this medal, and to hold me up to coming generations as an

example of an investigator. I waver between a feeling of joy and a feeling of grave responsibility. I have a proud joy that the result of my thoughts is to work on to future generations far beyond my individual life. You will also understand that as a father cares for his offspring, and endeavors to help them, so I have also a love for the children of my thought. These contain the best of my convictions; I lay upon them the utmost stress; and I rejoice if the further development of science is to be in their direction. But the doubt may arise, whether my own ideals are not too narrow, and my principles sometimes too imperfect, for the wants of humanity in all time. If so, I hope the awarders of this medal in the future will not confine themselves to what I have accomplished, but I should like to wave on high the one banner on which are inscribed the words, that the purpose of science is to comprehend reality and the play of phenomena as regulated by law."

As you know, in 1893 he visited the Columbian Exposition, and afterwards made a tour over a part of the United States and Canada. On the return journey, just before landing at Hamburg, he had an attack of vertigo, and fell down the ship's companion-way. He received a severe scalp wound and suffered a concussion of the brain. This was followed in July, 1894, by a cerebral hemorrhage. He lingered two months longer, dying September 8, 1894, in his 73d year.

From personal acquaintance and from portraits we all know Helmholtz's appearance. He had a well-knit, erect frame, a quiet, graceful carriage, and a fine, well-developed face and head. Although his manner was reserved and dignified, he was always kind and courteous.

Of Helmholtz's attitude toward religion nothing definite can be said. Like Darwin, he considered religious questions so purely personal that he rarely mentioned them even to intimate friends. Perhaps, with Spinoza—another philosopher having affiliations with the ophthalmic art—he felt that the free man deliberates not upon matters of death or of after-death, but on the problems of everyday life. In any event, we have chiefly to deal with the achievements of a useful, noble and pure career, and in so far as we strive to imitate such a master do we surely keep his memory green.

## A FEW PERSONAL RECOLLECTIONS OF HELMHOLTZ.

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The writer had the great privilege of being a pupil of Helmholtz, living eight years next door to him, at Heidelberg, seeing him almost every day. It gives me great pleasure to furnish some personal notes about Helmholtz's character, his working methods, industry, etc.

His working methods, from my first interview with him, aroused my admiration, by their directness. I presented myself in his laboratory without any introduction. He asked me what I wanted to do. I said I wanted to study ophthalmology, and my particular object was to drill myself in physiological optics, under assistance I could not obtain in Berlin.

"Where do you wish to begin your work?" I said: "I would like to begin at a certain problem in your paper on accommodation, of which I can not find a solution." He replied: "Sit down and let us see." I showed him the place, and told him that I was unable, with my knowledge of trigonometry, to reach a solution to which he had arrived at, without having given his readers the benefit of a demonstration. It was about a year after the celebrated paper had been published. He began to calculate and got puzzled. He began a second and a third time, with the same result. Upon the fourth attempt he handed me the paper and said: "This seems to be the way in which you may find the solution."

Later on, when I was in the midst of my optical studies, I was surprised that a man, so original and deep as Helmholtz, was a believer in authority. I told him that in the study of Thomas Young's "Mechanism of the Eye" I thought I had found a mistake in a demonstration. He looked at the problem and its solution and said: "That seems wrong to me, too," but he added: "I advise you to go over the subject again as carefully as you can, for what Thomas Young has asserted has usually been correct." I followed his advice and found that not Thomas Young but I was in error.

Helmholtz was an independent, methodical, and persistent thinker. When he received a paper on a new problem he used to read only the first pages containing the question, then he laid the paper aside, and tried to find the solution himself. If it agreed with the author's solution he looked the book over to find whether the demonstration of the author differed from his own. If his solution disagreed with the author's he began his independent demonstration anew. You see what a wonderful self-education this habit must have been and how resourceful it must have made his mind. Hemholtz, like Thomas Young, had not received a classical education in mathematics. Both men were original in their demonstrations. His father was professor of mathematics, but the son studied medicine in the military school of Berlin. From his later works it would appear that he must have had an extensive library. That was not so at all. Professor Kirchhoff told me that his library was very small, but he had the wonderful gift of being able to select the best books, and these he studied carefully. "He always went his own way, which we school mathematicians could frequently follow with difficulty, and besides," Kirchhoff said, "when in a physical problem Helmholtz finds that the structure of the best mathematical treatise is too low for his purpose, he builds another story on it himself."

How often have I admired the harmony and efficiency of his working methods. He never undertook an investigation if the problem, on mature consideration of its nature and estimation of his own strength, did not promise a solution. This forethought spared him many a disappointment, and gave him the greatest return for his time and labor.

With regard to discoveries and inventions he was of opinion that most men failed to accomplish what they aimed at not by lack of ability and intellect, but by laziness, i. e., abandoning the subject before they had pushed it to the end of their thinking.

Apart from all these excellent qualities, I should not forget to mention that he also possessed that quality without which the best minds will not accomplish a great deal; I mean the trivial quality of industry. How often have I looked up to him standing before his desk at 11 at night when I returned from some entertainment. He was a judicious and untiring worker; he did all his work himself, not as is the custom nowadays—to let other people work for him. He had no assistant in his scientific work, not even an amanuensis.

As to his character, I can speak only with the highest praise. His was a true and noble nature. He was silent and distant in conversing with people that were selfish, vain and frivolous, but kind and courteous to all that

were unassuming and honest. He would explain to a lady physical and philosophical problems of an obscure nature animatedly if he saw that she took a real interest in them. With his laboratory students he was very generous; he gave them a great deal of his time, all the advice and help that could benefit them, and he would not let them have "all work and no play." Every Saturday afternoon we walked together through the beautiful country about Heidelberg, taking supper at some village on the Neckar or in the mountains. He loved music, literature, and art. He took a lively interest in everything that promised progress. On the excursions with his pupils and his friends he was a jovial companion, and happy to see everybody else happy. In his character he was frank and honest, never stooping to a shadow of untruth, however plausible the excuse for it might appear to be. He was a man, noble, great, and true.

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## THE CONTRIBUTIONS OF HELMHOLTZ TO PHYSIOLOGY AND PSYCHOLOGY.

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CHICAGO.

### PHYSIOLOGY.

Physiology is an experimental science. The problems of physiology are problems of physics or of chemistry. Physiology thus becomes a superstructural science based upon anatomy, physics and chemistry. One who would solve the physical problems of physiology would also require a good working knowledge of mathematics. At the time Helmholtz undertook the solution of physical problems of physiology he was probably the best equipped man living, in the fundamental subjects above mentioned. For about ten years of his professorial life he was professor of anatomy and physiology. His foundation in anatomy was thus extended and elaborated far beyond that which most physiologists possessed. He was associated in his early studies with physicists and mathematicians so that his knowledge of physics and mathematics was also far beyond that of other physiologists of his time. We see in Helmholtz, then, a man in whom the circumstances of his early training and early professional life conspired to produce the best conditions for effective work. At the time he was a student in the University of Berlin, Johannes Mueller was professor of physiology and Gustav Magnus was professor of physics. Associated with him as pupils of one or the other of these great men were Du Bois Reymond, Virchow, Bruecke, Classius, Kirchhoff, Quincke, Seimens, Tyndall, and Wiedemann. It is said of Mueller that he "gave a great impetus to the movement that had already been begun in Germany in the direction of the investigation of biological problems by the methods of physical and chemical science." Helmholtz said of Mueller: "When one comes into contact with a man of his rank his spiritual scale is changed for life." There can be little doubt that Johannes Mueller's indefatigable search for truth and his enthusiastic demonstration of it when he had found it, profoundly impressed this group of disciples who were destined to reconstruct the whole field of experimental science.

Helmholtz's graduating thesis from the Medical Department of Berlin University was an anatomical one "On the Structure of the Nervous System of the Invertebrates" (De Fabrica Systematis Nervosi Evertebratorum). In this work he succeeded in establishing the fact that the nerve fibers were branches of nerve cells, the ganglia of the crayfish serving as material for demonstration. The microscope which he used, though a very crude instrument, was one which he had bought from savings of his allowance accumulated at a time when he was confined to the wards of a charity hospital with typhoid fever.

Very soon after Helmholtz graduated from the medical school he took up the problem of *animal heat*, devising a triple thermo-electric junction of iron and German silver, which he bent into the form of needles that could be inserted into the muscles of the frog. With the help of these thermo-electric needles he was able to detect a change of temperature as small as .001 of a degree centigrade. He determined that one contraction of a frog's muscle produced from .001 to .005 of a degree while tetanus of the same muscle lasting from two to three minutes caused a rise in temperature of from .014 to .018 of a degree. With the help of calorimeter experiments Helmholtz determined that the heat given off from the body is less than the heat which should be given off to the calorimeter during the combustion of the same amount of food consumed in the body in a given time. From this he inferred that the food undergoes incomplete combustion within the animal body. Some time later it was found that the nitrogenous foods are completely burned outside of the body while they are reduced within the body from the proteid level to the urea level, thus giving up only about five-sevenths of the total heat represented by the food. Helmholtz determined further that 2.6 per cent. of the heat given off by the body represents the heat of the excrementitious matter; 2.6 per cent. is required to warm the air which we breathe; 14.7 per cent. passes away in the water liberated from the surface of the lungs; while 80.1 per cent. is either radiated from the surface of the body or required to evaporate the perspiration. When we remember that all of this work that Helmholtz did on animal heat was new work and accomplished with instruments which he devised for the occasion we are compelled to give him great credit for the important additions which he had made to our knowledge in this field.

The subject of *fermentation* was one of the first subjects to engage the attention of this young medical man. Various theories had been put forward as to the cause of fermentation. It was known to be associated in some way with the yeast plant, but just how, was the matter under discussion. Helmholtz performed an experiment which went far toward solving the question at issue. He inclosed some sterile grape juice in a pig's bladder and immersed this in a vat of fermenting grape juice. After the lapse of a number of days it was found that the grape juice within the bladder had undergone no fermentation. It was concluded from this that the cause of the fermentation could not operate through the animal membrane. Helmholtz believed that it was the living yeast cell that caused the fermentation and that the liquid within the bladder did not ferment because the yeast cells could not pass through the bladder. This experiment by Helmholtz started others to experiment, and it was soon found that a filter paper or a plug of cotton would also protect sterilized grape juice from fermentation. It thus appears that Helmholtz was the pioneer in a line of experimentation from which has developed the whole modern science of bacteriology.

While Helmholtz was still in Berlin, before he had been called to his first professorship in Koenigsberg, he took up the study of energy, and after a mathematical

treatment of the subject, he presented, in July, 1847, his epoch-making thesis on the "Conservation of Energy" (Ueber die Erhaltung der Kraft). The principal points in this thesis were: 1, that energy is indestructible; 2, that energy may be transformed, but is never lost or destroyed. For example, the latent chemical energy of fuel may be liberated in the furnace; the steam produced may set the parts of the engine into motion; thus the energy of motion is the transformation of the original energy, some of which has escaped, but none of which has been destroyed. These were new ideas to most of the physicists of one-half a century ago. The conservative Magnus declined to express an opinion regarding the thesis of Helmholtz; Jacobi alone recognized the truth of it. Many of the physicists said: "This has already been well known to us. What does this young medical man imagine when he thinks it necessary to explain so minutely all this to us?" Poggendorff refused to print Helmholtz's article in his "Annalen." Finally, however, Du Bois Reymond's publisher, Reimer, not only published it, but paid Helmholtz for the manuscript, a thing quite unusual in those days, as at present for technical papers. Like all great discoveries and newly-formulated laws, this one had been long since foreshadowed by Newton, by Descartes and by Leibnitz, while Joule of Manchester and Colding of Copenhagen had several years before made thorough and conclusive experimental demonstrations of the principle of conservation of energy. In confirmation of this, note the following quotation from Colding's address of 1843, published by the Royal Society of Copenhagen: "Force is imperishable and immortal, and, therefore, where and wherever force seems to vanish in the performance of mechanical work, the force then merely undergoes a transformation and reappears in the new form." In the case of each one of these men the discovery seemed to be original and independent of other investigators. To Helmholtz belongs not the priority of the principle, but the credit for first presenting it in clear and unmistakable terms which made possible its application to problems of mechanics, as well as to problems of physiology. Helmholtz stands to the law of the conservation of energy the same relation that Darwin stands to the law of organic evolution: In both cases the field had been occupied by advanced scholars, but no one had succeeded in catching the ear of the public until these men in turn presented their theses in terms translatable into the living and moving thoughts of the people. This is only a repetition of what has occurred repeatedly in history of the development of the sciences.

In 1849 Helmholtz was made professor of anatomy, physiology and pathology in the University of Koenigsberg. The first physiological work of note which he produced in Koenigsberg was to determine the *velocity of the nerve impulse*. He used, in these preliminary experiments, the gastrocnemius muscle and the sciatic nerve of the frog. He used an especially elaborated set of electrical appliances which were far more accurate than any which had been used before in this field of research. With the help of these appliances he found that the rate of propagation of the motor impulse is about 100 feet per second. His method of procedure was to stimulate the nerve near to the muscle in one case or two inches away in another case, and determine the difference in time of the responses in the two cases. This difference represents the time required to traverse the two inches of nerve. Incident to this investigation Helmholtz found that however near to the muscle the nerve be stimulated a certain time will elapse before the muscle can respond. This period has been called the "latent period." Helmholtz followed this by the determination of the rate of the propagation of the sensory impulse. For this he used the human subject and a new set of appliances. By establishing the new idea, namely, the "reaction time," and determining the difference in reaction time between the thigh and toe he was able to compute the rate of propagation of the sensory impulse to be 160 to 300 feet per second. These methods of Helmholtz are practically the same as those used in the laboratories of physiological psychology for determining reaction time, time of discrimination, etc.

Helmholtz's interest in electro-physiology and animal electricity did not seem to be one that inspired him to seriously take up the problems in this field and pursue them to a finish. On different occasions something turned his attention briefly to this subject, and on each occasion he made invaluable contributions, but more particularly in the apparatus with which the problems could be solved. Helmholtz's knowledge of physics was an important element in his equipment for this work. One of his first contributions was his modification of the inductorum in such a manner as to equalize the effect of make and break shocks, while before his modification the break shock as produced by the Neef hammer was much the more irritating. He invented the pendulum myograph, the muscle lever or simple myograph, the moist chamber, and various electrical devices for controlling the strength and time of the stimulus. He contrived the non-polarizable electrodes and formulated the generally accepted theory regarding the muscle currents and the electromotive force of the muscle cell.

The next notable work which Helmholtz accomplished was the invention of the *ophthalmoscope*. His own words as to how he hit upon the idea may be of interest:

"I was endeavoring to explain to my pupils the emission of reflected light from the eye, a discovery made by Brücke, who would have invented the ophthalmoscope had he only asked himself how an optical image is formed by the light returning from the eye. In his research it was not necessary to ask it, but had he asked it, he was just the man to answer it as quickly as I did, and to invent the instrument. I turned the problem over and over to ascertain the simplest way in which I could demonstrate the phenomenon to my students. It was also a reminiscence of my days of medical study, that ophthalmologists had great trouble in dealing with certain cases of eye disease, then known as black cataract. The first model was constructed of pasteboard, lenses and cover glasses used in the microscopic work. It was at first so difficult to use, that I doubt if I should have persevered unless I had felt that it must succeed; but in eight days I had the great joy of being the first who saw before him a living human retina."

It was first described in the paper entitled, "Beschreibung eines Augenspiegels zur Untersuchung der Netzhaut im lebenden Auge." Though many changes have been made in the details of construction of this instrument the most modern and complete ophthalmoscope possesses no optical qualities not possessed by the one which Helmholtz first devised. The invention of this instrument opened a new era not only for ophthalmologists but also for practical medicine, as the retina may be regarded as an outlying portion of the brain. The examination of the fundus of the eye then gives to the physician information as to the pathological changes

occurring in the nerve centers. Thus it is of service in the diagnosis of inflammatory actions in the brain both acute and chronic; of changes in the meninges; in locomotor ataxia; of the various forms of Bright's disease and very many other maladies (McKendrick). In 1858, at the Ophthalmological Congress in Heidelberg, Helmholtz was presented with a cup, on which was inscribed the words, "To the creator of a new science; to the benefactor of mankind in thankful remembrance of the invention of the opththalmoscope." Twenty-eight years later, at the same university, at a meeting of ophthalmologists, Helmholtz was presented with the von Graefe medal in recognition of the services which he had rendered to mankind in the invention of the ophthalmoscope. The presentation was made by Donder, who closed his presentation speech with the words: "May this gift still remain to you a gratifying symbol of the privilege you enjoy of living in a generation that honors you as its benefactor."

Helmholtz's interest in physiological optics began with his invention of the ophthalmoscope, but it did not end until he had completely mastered the whole field and written his classic work on the subject of physiological optics. The second problem which he attempted concerned *the optical constants of the eye.* In order to determine the curvature of the refractive surfaces Helmholtz devised the *opththalmometer.* Without stopping to describe this instrument, it will be enough to give some of the results obtained with its use. Helmholtz found the radius of the curvature of the anterior surface of the cornea to be 7.829 mm., the radius of the curvature of the anterior surface of the lens 10 mm., and the radius of the posterior surface of the lens to be 6 mm., the distance of the posterior surface of the lens from the anterior surface of the cornea to be 7.2 mm. The distance of the anterior surface of the lens from the cornea is 3.6 mm. during rest and about 3.2 mm. during accommodation. From the above values Helmholtz calculated the index of refraction of the lens to be 1.4371 and that of cornea to be 1.3365. Helmholtz states of these optical experiments on the eye, that they fitted him especially for the solution of the problem that was engaging many of the physiologists and clinicians, namely, the problem of *accommodation.* Helmholtz's solution of the problem of accommodation, though antedated by that of Kraemer, was perfectly independent and was by far the most exhaustive study and most complete solution that had appeared up to that time.

The next subject to engage Helmholtz's attention was that of *color sensation.* Up to the time of Helmholtz, ideas of color had been based largely upon experiments with pigments. Helmholtz began to experiment with the spectral colors and found it necessary to reconstruct the whole theory regarding composite colors. He found: 1, that red, green and violet are the primary spectral colors; 2, that the quality of every luminous sensation depends on three variables: intensity, tone and degree of saturation; 3, that there are in the retina three kinds of nerve elements, each of which is especially responsive to the stimulus of color of one wave length and much less so to others. Thus when the three sensations are equally excited white light is the result; green is caused by a very weak violet stimulation, a stronger red and a still stronger green stimulation. At each end of the spectrum we have only the simple sensations of red and violet, and all the intermediate color sensations are compounds of varying proportions of the three primaries.

According to this theory, red blindness is attributable to the absence of red sensation, and green blindness to the absence of green sensation. As this represents Helmholtz's amplification and extension of Young's Theory it is known as the Young-Helmholtz Theory of Color Sensation.

We have briefly reviewed the more important contributions of Helmholtz to physiological optics. His experimental research on this subject was made mostly in Koenigsberg between the years of 1849 and 1856, but his great work, "Handbuch der Physiologischen Optik," was published in 1866, when he was in Heidelberg. This work is a classic and will be so considered through ages yet to come. "Everywhere one feels the grasp of a matter, whether in the exposition of the subject in hand or in its mathematical treatment" (McKendrick).

Next to his physiological optics, his greatest work was on *physiological acoustics,* for the most part accomplished during his professorship at Bonn (1856 to 1859), though some portions of it were done at Koenigsberg. The result of all of this work in acoustics was summed up in his masterpiece entitled, "Die Lehre von den Tonempfindungen als Grundlage für die Theorie der Musik" (Sensations of Tone as the Physiological Basis of Music). Published in Heidelberg, 1863.

Though his work on hearing has been less productive of ideas applicable in clinical medicine, it is no less profound and exhaustive, and will, like the other, remain among the classics in physics, in physiology and in psychology. The title of the work suggests that the master was addressing his presentation of the subject of physiological acoustics to the musicians. Curiously enough, it has been far less used by them than by workers in the several other fields mentioned. The reason is not far to seek: The masters in music no less than their pupils give their attention almost wholly to the esthetic side of their art. They are willing to accept without mathematical, anatomical or experimental proof certain fundamental principles of harmony, and in the elaboration of their art to be guided by these accepted principles and by any intuitions or inspirations which might come to them as natural gifts.

In his work on physiological acoustics, as in that in physiological optics, Helmholtz began his researches with a minute study of the anatomy of the organ in question; this was followed by a searching inquiry, both experimental and mathematical, into the physical properties and relations of the mode of motion (sound, light) concerned. Thus equipped he could hardly miss making notable contributions to the subjects.

Later subjects of study by Helmholtz were: 1. The cause and quality of the human voice. 2. The mechanics of respiration. 3. The movements of the eyes in binocular vision. 4. The visual horopter. These later studies, together with the publication of his works on acoustics and optics, occupied him during his professorship in Heidelberg (1859 to 1871).

Helmholtz was called to the professorship of physics in Berlin in 1871. For twenty-three years he occupied in Germany a position similar to that which his friend, Sir William Thompson—Lord Kelvin—occupied in England.

It is doubtful if the world has ever produced a man who combined greater breadth of knowledge and greater depth of wisdom, with keenness of vision, persistency and patience of pursuit, and modesty of claim. The debt of physiology to Helmholtz is inestimable.

PSYCHOLOGY.

The psychology of 1850 was the fruit of the introspective method of research. The value of this method as applied in the study of the higher intellectual processes can not be gainsaid. Even here, however, it is to be recognized as only one of several methods of extending knowledge of the higher intellectual faculties and processes.

The psychology of to-day is an experimental science, or, if not wholly so, at least the foundations and a large part of the superstructure represent experimental and laboratory research, the introspective method coming in only at the last to complete and round out the superstructure.

The metamorphosis in the methods of research in psychology has had the effect of giving it a new and much higher standing in the scientific world than it ever had in the period of a purely introspective method.

This renaissance of psychology is due in very large measure to the influence of von Helmholtz. A curious feature of the relation of Helmholtz to psychology is that those contributions of his which have come to be fundamental in psychology were at the time they were made published as contributions to physiology. In this connection it is significant to remember that the methods which Helmholtz originated in the fifth and sixth decades for the study of the senses and sensation, are the methods of the new psychology of the last three decades of the nineteenth century.

The contributions of Helmholtz to this realm of human knowledge are more notable in their character and quality than in their number and quantity. They mark Helmholtz in his relation to psychology as a pioneer and a pathfinder rather than a developer and finisher. This last is characteristic of his work in psychology alone. In physiology and physics the world has never produced a man who went deeper for the foundations of his subjects and who at the same time developed them more extensively and finished them more completely. His work in physiology and physics is at the same time the inspiration and despair of the leading students in these fields. That his relation to psychology was that of an explorer only may be readily accounted for in the fact that at the time he was working upon problems of sensation and the senses, psychology was the product of the introspective method alone, and the relation of his laboratory methods to the armchair meditations of the mental philosophers and metaphysicians was not at once apparent, and a considerable period elapsed before the psychologists began to apply the methods of Helmholtz to their branch. When they did they found his work an inspiration and a guide without finding the subjects so completed that there remained little to do. In the hands of such men as Wundt, Ladd, Stanley Hall, Cattell, König, Münsterberg, Ziehen, Baldwin and Scripture, all inspired by the pioneer work of Helmholtz, the new psychology has been put upon a thoroughly experimental basis.

Let us now consider briefly those studies of Helmholtz which may be accepted as making the basis of the new psychology.

In 1850, when Helmholtz was determining the velocity of the nerve impulse in sensory nerves, he originated the idea of the *reaction time*. The way in which this was applied is described under the head of Physiology. We know of what fundamental importance and far-reaching application this idea of the reaction time has been in psychology. Growing out of this idea we have the *discrimination period* and the *judgment period* or *decision period*.

Early in the fifth decade Helmholtz began his series of studies on the Sensations of Tone or the sense of hearing. As a part of this series of researches he made an exhaustive study of the anatomy of the tympanum and labyrinth. That portion of his work which was directed toward the nerve endings and the specialized epithelium of the labyrinth covers ground now included in psychology. Helmholtz worked out the only tenable theory as to the way in which these end organs of hearing are stimulated by the mechanical vibrations which beat upon the membrana tympani as sound waves. He went farther, and discussed the mechanism of cerebral sensation and the physiology (or psychology) of the sense of harmony in musical tones. In fact, Helmholtz's great work entitled "Sensations of Tone as a Physiological Basis of Music" is a classic for the psychologist as well as for the physicist and the physiologist.

We need to make only brief mention of the work of Helmholtz on the sense of vision. It was as exhaustive as that on hearing and was of as great importance to psychologists. Particularly important are the studies of the retina and its neuro-epithelium (rods and cones) and its nerve cells with the part that these play in visual sensation. Helmholtz studied especially the color sense. He revived and extended Young's theory of color sense; and this new theory has since been known as the Young-Helmholtz theory.

The new psychology had its birth in the studies of Wundt, begun in 1858 and leading to his "Beiträge zur Theorie der Sinneswahrnehmung," and later to his notable work on "Physiologische Psychologie," published at Heidelberg, in 1874.

Up to the present time the psychologists have not seemed to accord to Helmholtz the credit due him for the initial impulses which he undoubtedly gave to their department of physiology. Perhaps the physiologist tends to overestimate the importance of the work of their confrère Helmholtz; but it seems impossible that work such as his, lying on the border line of pure psychology and quite within the field of physiological psychology, should not have exerted a profound and far-reaching influence on all subsequent work in psychology.

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## THE DEBT OF OTOLOGY TO HELMHOLTZ.

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The influence of Helmholtz upon otology is almost incalculable, although signalized by no instrument like the ophthalmoscope with its epoch-making application and its huge clinical field. Reflectors of various kinds to illuminate the aural, nasal and pharyngeal cavities had been somewhat used before his day and received but moderate impulse directly through his ophthalmoscope, for it was really the perforated concave mirror of Hoffmann and Ruete which became the aurist's illuminator; but they did lead to marked gain in diagnosis and treatment through rivalry with the ophthalmic progress which he had inaugurated. His advance lay principally in his contribution to the underlying science of acoustics. This he found in almost the rudimentary and empyrical phase known to Pythagoras; and just as his disproof of spontaneous generation made a beginning of minute biological study, and his physical corollary of the conservation of energy became the basis of all modern material science, so he here applied

the fundamental principles and proceeded by experiment and deduction to build up a rounded science of acoustics. He filled out the many gaps in the observation of phenomena until the bulk of the observations were really his own, and then linking these with all otherwise discovered, he made them the coherent parts of general laws. So complete was his study that he could not only explain the known facts and point out the lines of new discovery, but could also define the probable limitations to practical advance in the dependent arts.

Physiologist, as well as physicist, he did not stop at the external phenomena, but worked out the transmission of sound through the aural apparatus to the end organ in the labyrinth, himself supplementing the anatomical details of the most advanced investigations; and while his conclusions have been combated, and alternative views have been plausibly presented, the Helmholtz theory still receives predominant acceptance. Nothing more strongly demonstrates the skill of Helmholtz, the teacher, than the matter-of-course acceptance as fundamental of most of his discoveries and the fact that his classical treatises have remained the text-books of the world. Yet the lucidity of the language has made translation almost wholly needless and his desire to simplify the mathematical elements of the problems, has put them in form which tempts many a reluctant student to deeper study than any other contributor to the subject has been able to inspire. Keenly alive to the artistic side of music, he has cleared much with regard to its composition and the musicians in their narrower field of esthetic production are largely indebted to him for his explications, and the physiology of such impressions has been developed to what seems nearly its full limit.

It is only indirectly, then, that we, as practicing otologists, owe to von Helmholtz our present means of diagnosis upon which, of course, must hang treatment as well as comprehension. Having defined the end organ of hearing and so differentiated the percipient from the conducting apparatus, he banished the term "nerve deafness" from the position of a broad category cloaking much ignorance and restricted it to a properly narrow group of our cases. He made the tuning-forks and other tone-producing apparatus the practical instruments in medical hands which they now are. He made clear the function and mechanism of the drumhead and ossicles in a way that forbids any undue regard for them as essential to useful hearing or an equally unscientific indifference which would needlessly remove them as unimportant. Many aurists do not recognize their debt to von Helmholtz and shortsightedly preach or practice in contravention of the principles which he has discovered or formulated; but the inevitable result is a fall in ruin of any structures they may have fondly reared and their own heads have often suffered in the collapse. His treatises will never make light reading for beginners, but the ophthalmologist and otologist who hopes to take and hold rank among his colleagues must always count as essential to his education a close study of the writings of Herman von Helmholtz.

**Anal Fissure Simulating Coxalgia in Children.**—The subjective symptoms in the case of three children observed by Svehla seemed to indicate hip-joint disease, but the discovery of a fissure in the anus revealed the true character. After the cure of the fissure the pains in walking, the limping and the deformed attitude, all vanished.—*Vratch*, December 29, 1901.

## CONTRIBUTIONS OF HELMHOLTZ TO PHYSICAL SCIENCE,

### ESPECIALLY WITH REFERENCE TO PHYSIOLOGICAL OPTICS INCLUDING THE DYNAMICS OF EYEBALL MOVEMENTS AND OF ACCOMMODATION.

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Helmholtz's attention was directed to the subjects to be discussed in this paper while very young. Even while attending the gymnasium and reading Cicero and Virgil, for which he had little taste, Helmholtz was pondering on various problems in optics not met with in text-books, and which served as a basis some years later for the construction of the ophthalmoscope. The mathematics of physical problems always came easy to him, not that he seems to have had any special love for pure mathematics for its own sake, but only as a means of solving the questions which interested him. His mathematical ability was of a very high order, and this fact seems all the more remarkable when it is noted that he never had any systematic training in this branch of science, as have most other eminent mathematical physicists. His knowledge in the more advanced departments of mathematics was acquired entirely through his own unaided efforts. Although circumstances of his early life made it best that he be educated for the medical profession, his taste was always on the side of pure science. Evidence of this is given by his own words, found in a lecture on "Thought in Medicine," delivered in 1877: "My own original inclination was towards physics; external circumstances obliged me to commence the study of medicine."[1]

Helmholtz appreciated, however, the great advantage to be gained by a thorough course of medical study, and in after years never regretted the time he had been obliged to spend on this and allied subjects.

Without detracting at all from the fame of Helmholtz, it must be noted that the state of physical science in Germany at the time he began his career was just right for a boom. Physiology was not admitted to be based on physics and chemistry, and, therefore, experiment and observation were not resorted to, to any extent, for the solutions of physiological problems. This was the case doubtless because it was profoundly believed that a mysterious vital force was responsible for most physiological changes.

France, and especially Paris, on the other hand, during this dormant period in Germany, had been leading in investigation, especially along physical and chemical lines. This condition soon had a decided influence upon Germany through the association of young men educated in Paris and holding positions subsequently in their home universities. From this beginning, then, the objective science school became prominent as opposed to the metaphysical school. To the former belonged Brüke, Du Bois Reymond and Helmholtz, who founded with others the Physical Society of Berlin. Of this group, according to Wiedemann, Helmholtz was the most distinguished, and certainly his superb work in later life in nearly all of the departments of science represented by the founders of the Physical Society quite justify Wiedemann's first impressions of him.

Helmholtz's aptness for both mathematics and physics led him to look upon physiology as attractive in furnishing an abundance of problems suitable for investigation along the physical and mathematical lines, rather than

1. Popular Lectures, 1881, p. 202.

on its own account. The physics of the eye, as well as of the ear, present notable examples of this sort, and both these organs were critically investigated by Helmholtz and a vast amount of most valuable and accurate information obtained. Also Helmholtz's investigations on the phenomena of animal heat led him gradually to lay the foundation for the great conservation principle as applied to energy as a whole.

His remarkable paper, "Ueber die Erhaltung der Kraft" was written when he was only 25 years old. Fifteen years later, in 1862, he had to force the idea embodied in his original essay upon the scientific world against much opposition, even Poggendorff refusing to publish his paper in the *Annalen*. The work was, however, published otherwise and its value very soon recognized. Of course the fundamental idea dates back perhaps to Newton, but it was never generally recognized or half understood.

### PHYSICAL AND PHYSIOLOGICAL OPTICS.

One of the most important as well as practical departments of Helmholtz's researches was that of physical and physiological optics, and we shall now examine a few of the various problems therein involved, most of which he studied to conclusions the truth of which have never been questioned.

It is the general impression among people that the human eye, when considered in its normal type, must be about as perfect an optical instrument as can be imagined. Helmholtz was among those to point out, however, what is now well understood, viz., that the eye is so far from perfect that he remarked in his "Physiological Optics": "Should an optician send me an instrument having like optical defects, I should feel justified in sending it back." He further remarks, however, that "the defects which may be traced in the eye, *considered as an optical instrument*, do not detract from the excellence of the eye *considered as the organ of vision.*" Physical perfection is quite a different thing from practical perfection considered from the point of view of a physiologist. The latter had persisted in failing to recognize the physical defects, though we find "that Newton pointed out the chromatic aberration of the eye two centuries ago; that D'Alembert, in 1767, proved that the lenses of the eye might have as great a dispersive power as glass without the want of achromatism necessarily becoming noticeable; that the celebrated optician Dolland, the inventor of the achromatic lens, showed that the refractions which take place in the eye all tend to bring the violet rays towards the axis more than the red; that Maskelyne the astronomer, Wollaston the physicist, Frauenhofer the optician, and other scarcely less distinguished men of science have made actual measurements of the distances of the foci in the human eye for the different rays of the spectrum. The persistence with which writer after writer has asserted the achromatism of the human eye appears so extraordinary that it can only be accounted for by the prevalence of the preconceived notion that the eye is absolutely perfect—a notion not without its reason and grounds in the fact of the exquisite adaptation of the organ of sight to the needs of humanity."[2]

Although a method of examining the retina had long been desired and almost had been found before Helmholtz, it remained for him to devise finally the instrument in its completeness, viz., the ophthalmoscope. Although many of these instruments have been made since, none of them present essentially any new methods for illuminating and examining the retina. It was in 1851 that Helmholtz first described the ophthalmoscope, and during the last fifty years this little instrument has been probably the chief means of extending the knowledge of oculists regarding the diseased and healthy conditions of the eye. In this way the substance of the lens and the state of the fluids can be directly examined, the causes of impaired vision can be discovered, and the nature of many maladies made out with reasonable certainty. Many insidious troubles can thus be detected and very likely successfully treated and cured before the organ has become permanently diseased. In some cases even, as is well known at the present time, the ophthalmoscope gives the most certain evidences of the existence of obscure and often unsuspected diseases of other parts of the body. In 1858, at a meeting of the Congress of Ophthalmologists at Heidelberg, Helmholtz was presented by von Graefe with a cup inscribed, "To the creator of a new science, to the benefactor of mankind, in thankful remembrance of the invention of the ophthalmoscope." Some years later the von Graefe medal was instituted with which to honor, once in ten years, the man, without regard to nation, who should have done most for the science of ophthalmology. The first medal of this foundation was presented to Helmholtz in August, 1886, at the occasion of the celebration of the 500th anniversary of the founding of the University of Heidelberg.

The details of the ophthalmoscope differ somewhat with different makes, but the general principles are familiar to all medical men and to most physicists. The instrument consists essentially of a converging or concave mirror for concentrating the light of a lamp, conveniently placed for the purpose, through the pupil to illuminate the retina or other parts of the eye to be examined. The eye of the observer is behind a small hole in the center of the mirror. In front of this opening and therefore between it and the part under examination is a magnifying lens or combination. The whole arrangement is very simple, efficient and easy of manipulation.

Another instrument invented by Helmholtz, by means of which the optical constants of the eye can be measured accurately, is the ophthalmometer. Such a piece of apparatus must necessarily be more complicated than a simple observing device and requires far more skill to operate it for accurate results. It is fully described and the method of using it discussed in Chapman's "Human Physiology." In the hands of this author a few years ago the average radius of curvature of the normal cornea in fifty cases measured was found to be 7.797 millimeters in the vertical plane and 7.552 millimeters in the horizontal plane.[3]

Helmholtz made use of the ophthalmometer also in the solution of the problem of accommodation of focus for different distances. An ordinary optical lens, as, for example, a camera combination, has a definite focal length, i. e., a fixed distance at which a beam of parallel rays incident on one side will be brought together on the other side. Suppose a camera adjusted with its ground glass showing sharply defined the image of a very distant object. Direct the camera to an object near at hand and the image will be out of focus. Theoretically sharp definition may be restored in two ways—either by moving back from the lens the ground glass a small distance, or by changing the curvature of the lens surfaces. The latter, of course, is impracticable,

2. Discoveries and Inventions of the Nineteenth Century, p. 343.

3. Proceedings Academy Nat. Sciences, 1893, p. 349.

and the readjustment of distance from plate to lens is easily accomplished. Now, the eye is a small camera and we easily and rapidly adjust for the distinct vision of both near and far off objects. But how is this done in the case of the eye? Do we change the position of the retina relative to that of the lens and cornea, or do we change the shape of the lens? This problem Helmholtz attacked and studied very satisfactorily by means of the ophthalmometer. He was ignorant at the time that it had been shown already by Cramer that in changing the eye adjustment suitable for far objects to one suitable for near ones the convexity of the lens increases. The three images observed by light reflected from the eye, one formed by the anterior surface of the cornea and one each by the two lens surfaces had been progressively discovered some years before, but nobody before Cramer had noticed that in changing the eye adjustment as above, the middle image moved nearer the outer one and at the same time became smaller. As this image is a virtual one formed by the anterior surface of the lens, both changes indicate an increase in curvature of this surface.

To perform this experiment more conveniently than can be done in a dark room Helmholtz invented an instrument he called a phakoscope. It is simply a shallow triangular black box truncated at the corners, with openings through the corner faces and in one long side. The eye to be examined is placed at the corner opposite the side opening and looking through or at the same. At one of the other corners is the observer's eye and at the third is the light. The method is obvious.

The ophthalmometer was now used to measure the sizes accurately of the three images under various sets of conditions. The essential parts of the instrument consist of a pair of plano-parallel glass plates about 2 centimeters square and 6 or 8 millimeters thick, whose refractive index has been measured with the greatest accuracy and also their thickness; a short focus telescope and a rod or frame for holding the luminous object, images of which are to be formed by the eye surfaces under examination. The plates are mounted one above the other initially co-planar and independently capable of rotation about the same vertical axis. This combination can be rotated at will, the plates in the same or opposite directions and the angle determined with great precision on a suitably graduated circle. It is placed on the optical axis of the telescope, the eye to be observed being located on the same axis looking into the telescope and beyond the plates. The source of light is near the observer's eye and images of it can be seen through the telescope formed by the surfaces of the eye to be examined. It is a well-known fact that if an object be viewed obliquely through a plano-parallel plate it will seem laterally displaced in amount depending on the angle and on the thickness of the plate, as well as upon its index of refraction. This is the principle of the ophthalmometer. If the two plates be rotated in opposite directions the image will divide, half moving to the right and half to the left. If the rotation be continued until the displacement is equal to the width of the image, this value can be calculated from a simple formula involving the rotation angle which is observed and the constants of the instrument previously determined. By this arrangement Helmholtz proved that the shape of the cornea does not change, but that the anterior surface of the crystalline lens changes its radius from 10 millimeters to 6 millimeters in viewing a near object after looking at a remote one; that the radius of the posterior surface changes from 6 to 5.5 millimeters only. Also that the minimum distance from the cornea to the anterior lens surface is 3.3 millimeters, while the maximum distance is 3.7 millimeters; that the minimum thickness of the lens is 3.8 millimeters; maximum thickness 4.3 millimeters. These values, when considered together with the indices of refraction of the several media concerned, easily account for the changes of focal length required for accommodation. Helmholtz made this investigation quite complete by offering an explanation of the mechanism of accommodation which is now universally accepted as the true one. The matter had been studied before by Thomas Young, C. Weber, Cramer, Donders, Brücke, and others, so that the anatomy was well understood. In the words of McKendrick,[4] Helmholtz's conclusion was, "that in accommodation the fibers of the ciliary muscle contract and tend to draw the ciliary processes of the choroid forward. Passing in close proximity to these processes, and connected with them, is a thin transparent membrane, the hyaloid membrane, which lines the posterior chamber of the eye. Anteriorly this membrane divides into two layers, one passing before and the other behind the lens, forming what is termed its capsule. The lens is thus bound down, as it were, by its capsule, more especially by the portion of it passing over its anterior surface. When therefore the ciliary processes are pulled forward by the ciliary muscle, the tension of the layer of the capsule in front of the lens is diminished, and the anterior surface of the lens bulges forward by its elasticity. There are certain muscular fibers of the ciliary muscle that also assist in this beautiful mechanism. When the eye is again directed to a distant object, the fibers of the ciliary muscle relax, and the lens is flattened by the pressure of the capsule." Helmholtz further proved that the conditions above explained are not only the *necessary* ones, but that they are also *sufficient* for the accomplishment of accommodation.

This investigation, with its results, is deemed by McKendrick "one of the greatest triumphs of modern physiology."

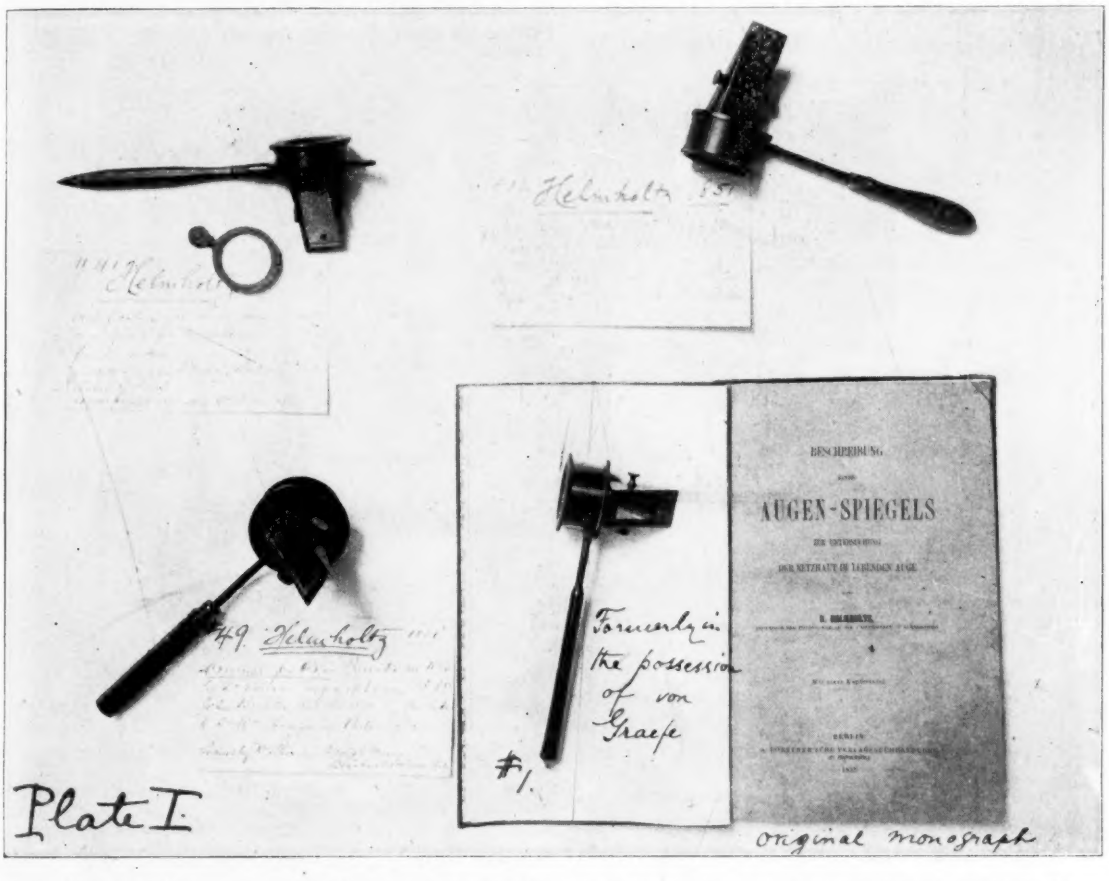
### COLOR SENSATIONS.

During the period of 1852 to 1856 Helmholtz devoted much time to color, more especially to the subjective side of it, viz., color sensation. Assuming the wave theory of light, as some years before demonstrated by the great work of both Thomas Young and of Fresnel, Helmholtz directed his attention to the mechanism of color sensation. Young had concluded that there are three simple color sensations, viz., red, green and violet, since each of these color sensations can be produced only by objective waves of a limited range of length which can be definitely measured physically, and since all the other colors may be matched by a judicious mixing of these three. The quality of the resultant hue depends on the proportional intensity of each component in the mixture and the total brightness is the sum of the component intensities. Brewster developed the red, yellow and blue primary color theory, which led to much controversy and has failed to meet the requirements. Many of Brewster's experiments were made with pigments instead of with colored light. Helmholtz stepped in at this stage and invented a simple method of superposing any part of one spectrum on any part of another, thus to study the result of the numerous combinations possible. By varying the relative intensities of the two spectra he could at will change the relative brightness of the colors to be mixed.

4. Hermann von Helmholtz, by Dr. T. G. McKendrick, p. 102.

This method is more exact than Maxwell's, in which the eye is made to receive consecutively various color stimuli, and which relies on the persistence of vision for the resulting sensation. By Helmholtz's method the retina receives at the same time, in the same place, the two or more stimuli applied. By mixing the spectral colored lights in pairs he was able to reproduce all the spectrum colors except red, green and violet, and also to produce many shades besides, the names of which at the present time largely depend on convention. He further concluded that a definite color sensation required for its complete definition the determination of three values, those of hue, of saturation and of luminosity. The first depends on the objective wave length of the color present; the second on the ratio of the quantity of the pure color to the quantity of white present; the third affects the intensity of the sensation and is partly dependent on the actual amount of radiant energy incident on the retina. Near the end of his life Helmholtz held that this third characteristic, viz., luminosity, really plays a more important part in the theory of color perception than was formerly supposed. By exceedingly careful analysis of white light, assisted by Arthur König, he specified definitely three fundamental color sensations, a nearly pure carmine red, green, and ultramarine blue. This in the main, it will be remembered, was the classification advanced by Thomas Young in 1802, whose basic assumption was, though not so clearly stated as by Helmholtz, that the optic nerve terminates on the retina in three distinct sorts of organs which, when stimulated, give rise to the sensations of red, green and blue respectively. According to this theory, the particular set to be stimulated depends on the wave length of the incident light. Helmholtz accepted this theory in general as correct and by his careful studies extended it to account for various phenomena not studied by Young. This general theory, known as the Young-Helmholtz theory of color sensation, accounts for most of the facts in a very satisfactory manner. It serves remarkably well in accounting for color blindness of various kinds; also for contrast effects; subjective color (due to retinal fatigue), etc.

Many physiologists and modern psychologists, especially the latter, do not accept this theory as the correct one, but are inclined to the Hering[5] theory, which supposes actual change in a visual substance, some of the processes being of a "constructive-assimilating kind" and others of a "destructive assimilating kind," but the scope of this paper does not permit a discussion of the relative merits of these two theories. Although there are some cases from the point of view of a psychologist not explicable on the Young-Helmholtz hypothesis, it certainly appeals very strongly to physicists and was firmly adhered to by Helmholtz and his associates to the time of his death, only seven years ago.




### OCULAR MOVEMENTS.

Another special study taken up by Helmholtz appropriate for consideration in this paper was that of the mechanics of the eye movements. It does not seem at first as if this subject should require a very great amount of study for the solution of the problems presented; but in the language of McKendrick in his life of Helmholtz, "only those, however, who have read the chapters on the subject in his 'Physiological Optics' can form a conception of the amount of work expended upon it. The bibliography alone is a model of literary research." Helmholtz's work in this department of optics was done from 1862 to 1867, although he wrote two or three

5. Wien. Sitzbericht, lxvi, lviii, lxix, lxx, 1872.

more papers ten or fifteen years later. In 1862 appeared a preliminary paper which investigated the surface, images of any point of which would fall on homologous points on the two retinas, thus giving rise to the sensation of a single image. Such a surface had been called the horopter by Aguilonius in 1613, and it was shown by Helmholtz that when viewing the horizon the horopter is a horizontal plane passing through the feet. In general the case is not so simple.

In 1863 he published two mathematical articles on eye movements illustrated by clever experiments. In 1865 appeared three contributions on phases of the same subject. In 1864 he gave before the Royal Society a famous paper "On the Normal Motions of the Human Eye in Relation to Binocular Vision." Also two papers on the horopter were published in the same year.

At the International Ophthalmological Congress at Paris in 1867 Helmholtz read a paper on "Stereoscopic Vision." The anatomy of the subject would be out of place here, but the voluntary and involuntary muscle actions were carefully differentiated by Helmholtz, and he demonstrated by the higher mathematics the truth of the so-called "Listing's Law," which provides for all the degrees of freedom of rotary motion for the eyeball except a pure rotation about an antero-posterior axis through the optic center of the lens, i. e., about the optic axis. Within a few years a paper on this subject by Carl Weiland[6] throws some doubt on the generally accepted views of eyeball movements as developed by Listing and Helmholtz.

While studying the general case of the horopter Helmholtz invented the telestereoscope which, in the hands of a well-known German firm, has taken the size of an ordinary binocular opera glass and shows distant objects in relief as if the two eyes subtended the same angle that they would subtend if moved much nearer.

Helmholtz concluded from his final researches on binocular vision that the homologous positions on the two retinas of the images of an object do not entirely explain the mental interpretation of these as belonging to a single object; and further, that the problem can not be solved from a purely anatomical study.

6. Archives of Ophthalmology, vol. xxvii, 1898.

## APPENDIX—DESCRIPTIVE LIST OF THE OPHTHALMOSCOPES

IN THE HISTORICAL EXHIBIT, ST. PAUL MEETING OF THE AMERICAN MEDICAL ASSOCIATION. PREPARED BY DR. HARRY FRIEDENWALD, BALTIMORE.

### Older Ophthalmoscopes.

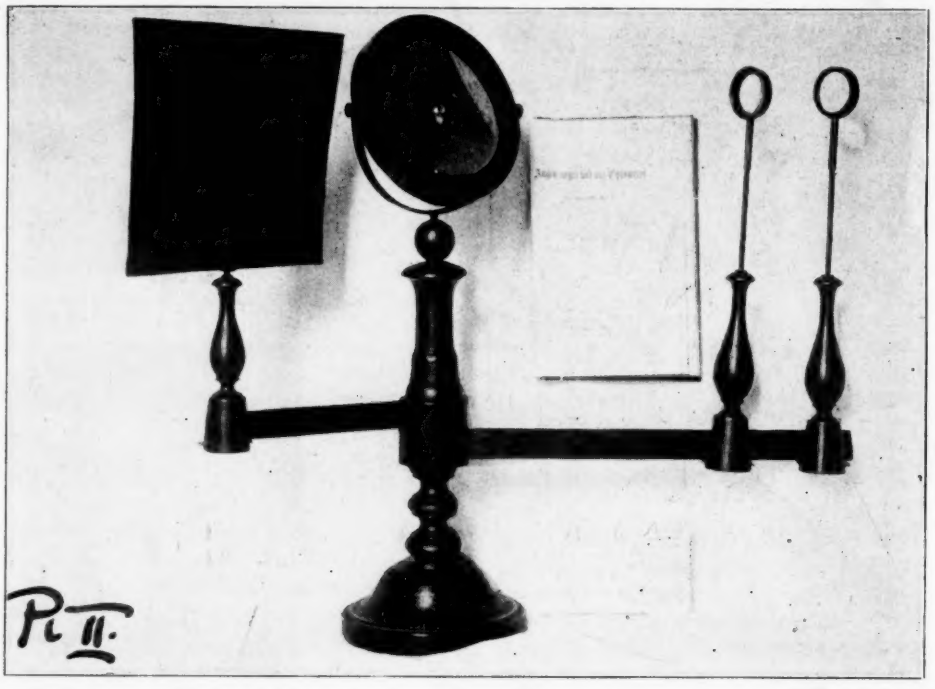
HELMHOLTZ. 1851.

1. Original form, described in Helmholtz's monograph "Beschreibung eines Augenspiegels, etc., Berlin, 1851." Formerly in the possession of Albrecht von Graefe. See Plate I, No. 1. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

2. Similar. Angle of glass plates 25°. Formerly belonged to Dr. Julian J. Chisholm. Loaned by Drs. Herbert Harlan and F. M. Chisolm, Baltimore, Md. See Plate I, Fig. 12.

3. Similar to 1. Angle of glass plates 30°. Presented in 1853 by Dr. Eduard Jaeger, of Vienna, to Dr. John Brinton, and in 1870 by the latter to Dr. Wm. Thomson, of Philadelphia. See Plate I, Fig. 49. Loaned by Dr. Thomson, through Messrs. Bonschur & Holmes, Philadelphia.

4. Modification. The lenses are inserted in a slit at the side. See Plate I, Fig. 41. Sent to Dr. John H. Dix, of Boston, by Prof. Sichel, of Paris. Loaned through kindness of Dr. B. Joy Jeffries, Boston.




5. Similar to 4. Made in Halle, Germany. Loaned by Dr. H. B. Young, Burlington, Ohio.

RUETE. 1852.

First *concave* mirror. First practical instrument for indirect method. Described in "Der Augenspiegel und das Optometer. Göttingen, 1852." See Plate II. Loaned by Dr. Haskett Derby, Boston.

COCCIUS.

"See Anwendung des Augenspiegels. Leipzig, 1853."

1. Plane mirror with condensing lens attached. Plate with circular perforation to reduce size of mirror. See plate III, Fig. 71. Loaned by Dr. Lucian Howe, Buffalo.

2. Modification: Circular mirror. Plane, metallic mirror, with convex lens attached, distance between mirror and lens adjustable. See Plate III, Fig. 26. Makers: Messrs. Tiemann & Co., New York. Loaned by them.

3. This instrument has a fixed distance between the ophthalmoscope and the lens; in the original instrument this distance is variable. See Plate III, Fig. 25. Loaned by Messrs. Tiemann & Co., New York.

4. With slide containing six lenses behind mirror. Loaned by Wills Eye Hospital, through Dr. Conrad Berens, of Philadelphia.

ZEHENDER. 1854.

1. *Original form* (described in Graefe's Archiv, I, 1, 121). Convex, metallic mirror. See Plate III, Fig. 47. Loaned by Dr. F. Koeller, of Pittsburg.

2. Slightly modified. Makers: Messrs. Otto and Reinders, New York. See Plate III, Fig. 29. Loaned by Dr. Haskett Derby, of Boston.

BURROW. 1856.

1. (See Graefe's Archiv III, 2, 68.) Heterocentric Reflector: Made of biconvex lens silvered on back, in pillbox case. Loaned by Dr. B. Joy Jeffries, of Boston.

2. Similar to I, but with handle attached. See Plate III, Fig. 30. Loaned by Dr. Haskett Derby, of Boston.
3. Modification by Elsberg, revolving sector with four lenses back of mirror. See Plate III. Fig. 20. Loaned by Messrs. Tiemann & Co., New York.

JAEGER. 1854.

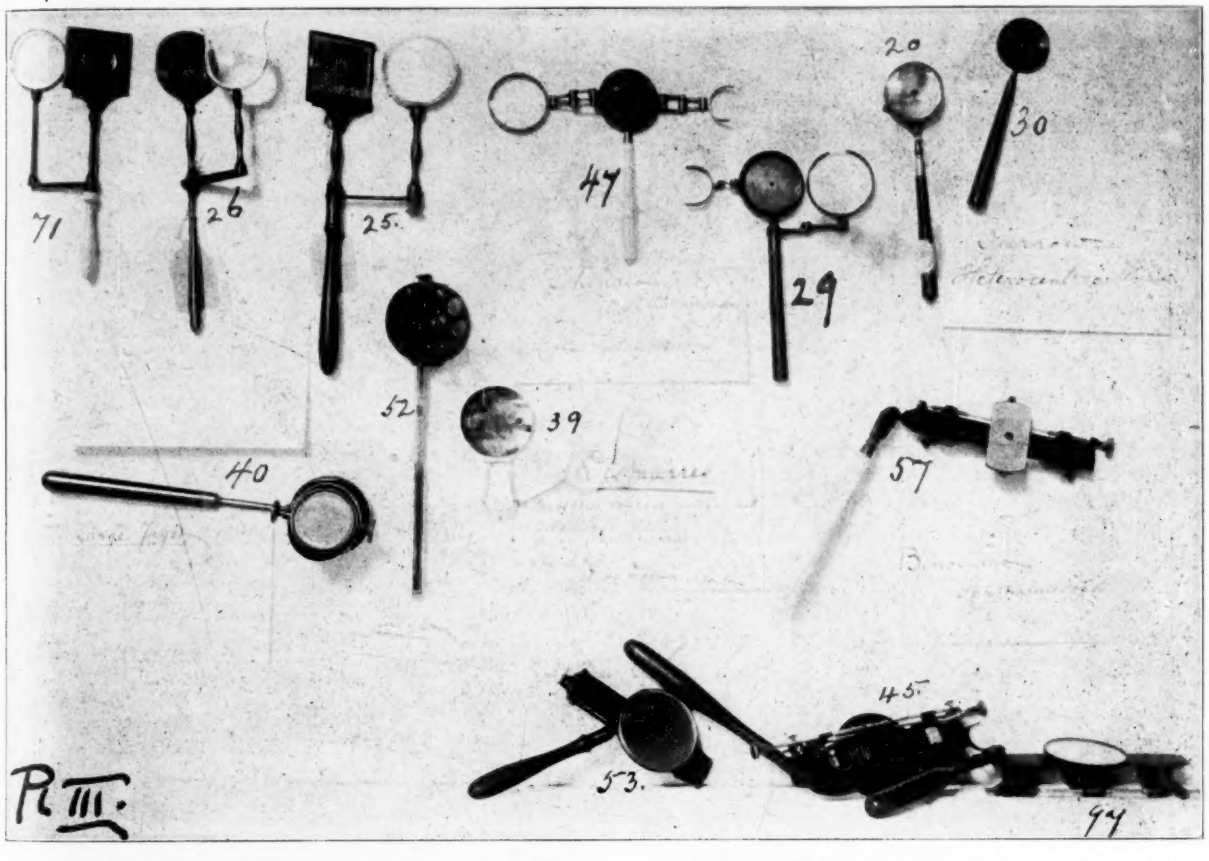
1. Large Jaeger (described in "Staar and Staar Operationen, Wien, 1854). Three reflectors: (*a*) plates of glass; (*b*) concave silvered mirror; (*c*) plane silvered mirror. See Plate III, Fig. 40. Used by Dr. Jeffries in Vienna in 1858 and 1859. Loaned by Dr. B. Joy Jeffries, of Boston.
2. Loaned by Dr. Haskett Derby, of Boston.
3. Loaned by Dr. Risley, of Philadelphia, through Messrs. Bonschur and Holmes, of Philadelphia.
4. The plates of glass are protected on the back by a metal shield with central opening. Loaned by Wills Eye Hospital, through Dr. Conrad Berens, Philadelphia.
5. Loaned by Dr. Barck, of St. Louis.
6. Mauthner's pattern.. See Mauthner "Ophthalmoscopie," 1868, page 108; more compact than original. Formerly belonged to Dr. Noyes, of New York. Loaned by Dr. D. W. Hunter, of New York.
7. Similar to 6. Loaned by Dr. Wm. Thomson, of Philadelphia, through Messrs. Bonschur and Holmes, of Philadelphia.
8. Similar to 1. Loaned by Dr. C. H. Williams, of Boston.
9. Similar to 4. Loaned by Dr. C. H. Williams, of Boston.
10. Incomplete. Loaned by Dr. Callan, of New York, through Mr. E. B. Meyrowitz.

## Demonstration Ophthalmoscopes.

1. *Schweigger:* Demonstration Ophthalmoscope for two observers. Described in Berl. Klin. Wochenschr., 1871, p. 581. See Plate IV. (Similar to Sichel's instrument, as described in Graefe & Saemisch's Handbook, First Ed., Vol III, p. 161.) Makers: Messrs. Paetz & Flohr, of Berlin; formerly in possession of Dr. Noyes. Loaned by Dr. D. W. Hunter, of New York.
2. *Graefe-Peppmüller:* Demonstration Ophthalmoscope. See Plate IV, Fig. 66. Described at the 50th Versammlung Deutscher Aerzte und Naturforscher, 1877. Loaned by Dr. Charles H. May, of New York.
3. *Graefe-Peppmüller:* Small mirror attached to Liebreich's Ophthalmoscope, similar to 2. Loaned by Dr. Harry Friedenwald, of Baltimore, Md.
4. *Schoeler:* Demonstration Ophthalmoscope: Small mirror set at angle just behind opening of Ophthalmoscope; described in Schoeler's Jahresbericht der Klinik fuer 1876, p. 51. Loaned by Dr. C. H. Williams, of Boston.

## Simple Ophthalmoscopes.

1. *Small Jaeger:* See Mauthner's "Ophthalmoscopie," p. 108, similar to early "Liebreich." Concave metal mirror. The fork holding the correcting lens is detachable. Makers: Messrs. Tiemann & Co., of New York. Loaned by them.
2. *Liebreich:* Earliest pattern. Metal mirror. Makers: Messrs. Paetz & Flohr, of Berlin. Loaned by Dr. W. B. Hunter, of New York (formerly in possession of the late Dr. Noyes).




11. *Dr. G. Strawbridge's Modification.* Three revolving Rekoss discs. See Plate III, Fig. 52. See Trans. Amer. Ophth. Soc., 1871, page 120. Loaned by Dr. Strawbridge, of Philadelphia, through Messrs. Bonschur and Holmes.

## Stationary Ophthalmoscopes.

LIEBREICH.

1. See Plate IV (described in Arch. f. Ophth., 1854, Vol. I. 2). Loaned by Dr. Hermon Thomas, of Philadelphia, through Messrs. Bonschur and Holmes, of Philadelphia.
2. Similar to 1. Loaned by Drs. Chisolm and Harlan, of Baltimore.
3. *Fixed Model of Follin:* Made by Nachet, of Paris. See Plate IV. Loaned by Dr. Haskett Derby, of Boston.
4. *Galezowski:* 1862. See Acad. de Med. France, 7 Jan., 1862. This is a modification of Liebreich's Stationary Ophthalmoscope and of Hasner's. See Plate IV. Makers: Messrs. Otto and Reynders, of New York; formerly in possession of Dr. E. N. Brush. Presented to and loaned by Dr. Harry Friedenwald, of Baltimore, Md.
5. *Galezowski:* Concave metallic mirror and collecting lens contained in telescopic tube; opening on side for entrance of light; one end fits on patient's face; may be used in light room. Maker: Charriere, of Paris. Loaned by Drs. Herbert Harlan and Frank M. Chisolm, of Baltimore, Md.
6. *Galezowski:* Similar to 4 and 5, metal mirror. Loaned by Wills Eye Hospital, through Dr. Conrad Berens.
7. *Galezowski:* Similar to 4 and 5. Loaned by Dr. Charles H. May, of New York.
3. *Liebreich:* Earliest form, concave metal mirror. Loaned by Dr. B. Joy Jeffries, Boston.
4. *Liebreich:* Later model, concave metal mirror. Loaned by Dr. F. M. Chisolm, Baltimore, Md.
5. *Liebreich:* More modern form, glass mirror, long handle. Loaned by Messrs. Tiemann & Co., New York.
6. *Liebreich:* Later model. Loaned by Dr. B. Joy Jeffries, Boston.
7. *Liebreich:* Small model. Loaned by Messrs. Tiemann & Co., New York.
8. *Liebreich:* Very small form. Loaned by Dr. C. H. Williams, Boston.
9. *Anagnostakis:* Similar to Liebreich, but of very short focus. Described in "Essai sur l'exploration de la Retine," Paris, 1854. Made by Soleil, Paris. Loaned by Dr. C. H. Williams, Boston.
10. *Anagnostakis:* Similar to 9. Loaned by Wills Eye Hospital, through Dr. Conrad Berens, of Philadelphia.
11. *Nachet:* Modification of Liebreich: Small revolving disc with four correcting lenses attached to back of mirror. Loaned by Dr. Flemming Carrow, Ann Arbor, Mich.
12. *Desmarres:* Concave metal mirror single sight hole. Maker: Charriere, Paris. Loaned by Dr. Haskett Derby, Boston.
13. *Desmarres:* Concave metal mirror with two sight holes. See Plate III, Fig. 39. Maker: Charriere, Paris. Loaned by Dr. B. Joy Jeffries, Boston.
14. *Desmarres:* Two openings; metal mirror; similar to 13. Loaned by Dr. C. F. Clark.
15. *Pocket Ophthalmoscope:* Concave mirror, with metal protecting cover; the cover is attached to the mirror by a hinge, and

when open is used as handle. Makers: Messrs. Curry & Paxton, London. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

16. *Argyll-Robertson Ophthalmoscope:* Made by Gardiner in Edinburgh, 1878. The whole is about the size of a large flat pillbox, of which the mirror forms the lid; the box contains a convex lens; very compact. Loaned by Dr. A. W. Stirling, Atlanta.

17. *Pocket Ophthalmoscope:* According to Donders: Very compact, similar to 16. Loaned by Dr. Dudley Reynolds, of Louisville, Ky.

## Binocular Ophthalmoscopes.

1. *Giraud-Teulon Binocular Ophthalmoscope:* Made by Nachet, Paris. See Annal. d'oculist, 1861. Cong. méd. de France, 1863. Annal d'oculist, 1867. See Plate III, Fig. 53. Loaned by Dr. G. Strawbridge, through Messrs. Bonschur & Holmes, of Philadelphia.

2. *Giraud-Teulon:* Made by Nachet, formerly in possession of Dr. Metz, of Massillon. Loaned by Dr. E. P. Morrow, Canton, Ohio.

3. *Early Giraud-Teulon:* See Plate III, Fig. 97. Loaned by Dr. C. H. Williams, Boston.

4. *Lawrence's Binocular Ophthalmoscope:* Modification of Giraud-Teulon. Makers: Murray & Heath, London. See Plate III, Fig. 45. Loaned by Dr. B. Joy Jeffries, Boston.

5. *Giraud-Teulon:* Old form. Loaned by Dr. Callan, of New York, through Mr. E. B. Meyrowitz.

6. *Giraud-Teulon Binocular Ophthalmoscope:* With spectacle attachment. Loaned by Dr. Casey A. Wood.

7. *Lawrence's Binocular Ophthalmoscope:* (Modification of Giraud Teulon) made by Grunow. Formerly property of Dr. Noyes. Loaned by Dr. D. W. Hunter, New York.

5. Three interchangeable discs. Described in Trans. Am. Ophth. Soc., 1869, p. 47. See Plate V, Fig. 73. Made by Hunter. Loaned by Mr. Alex. Shaw, New York.

6. Three discs similar to 5. Loaned by Dr. C. H. Williams, Boston.

7. Slight modification of 5. Three discs. European make. See Plate V, Fig. 80. Loaned by Dr. Harry Friedenwald, Baltimore.

8. Similar to 7. European make. See Plate V, Fig. 77. Loaned by Dr. Dudley Reynolds, Louisville, Ky.

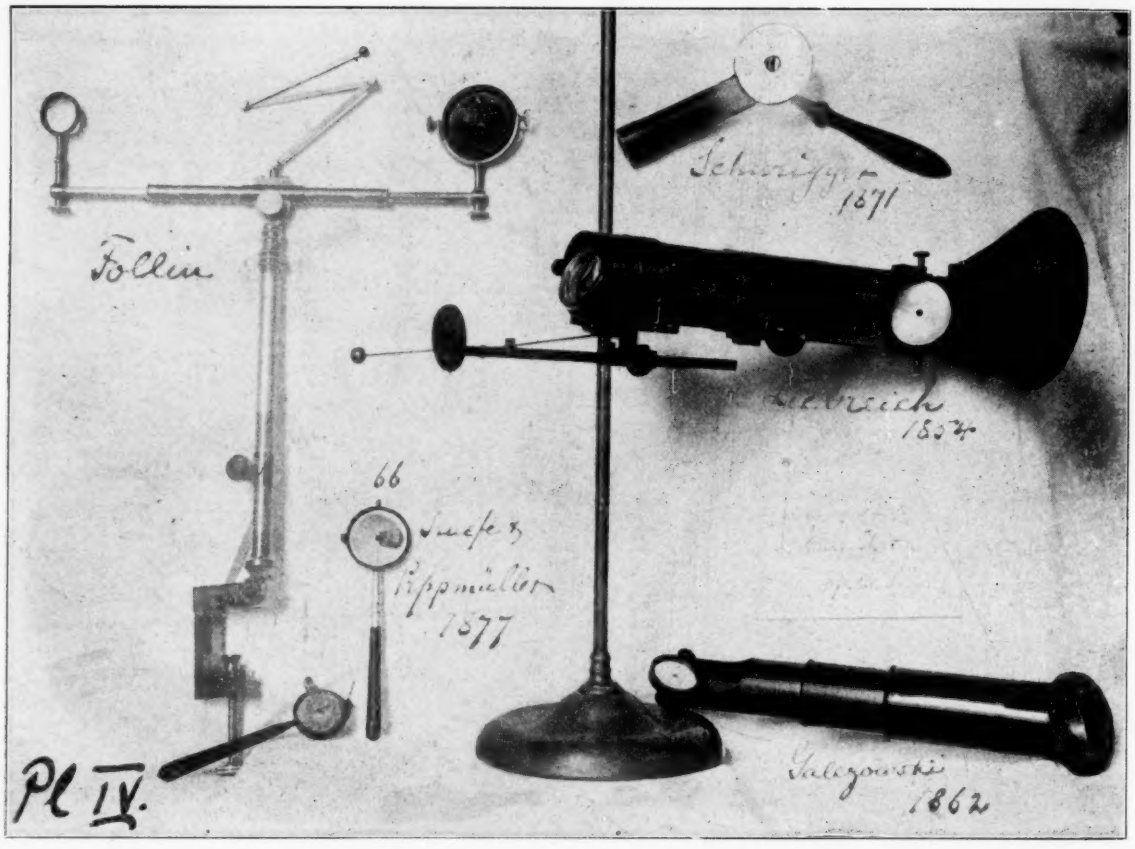
9. Three interchangeable Rekoss discs with *Wadsworth Tilting Mirror.* See Boston Med. and Surg. Journ., 1877, p. 105. Maker: H. W. Hunter, New York. Loaned by Dr. Wadsworth, Boston.

10. Single disc (12 concave lenses, 12 convex lenses). Tilting mirror. See Plate V, Fig. 19. Loaned by Messrs. Tiemann & Co., New York.

11. Early model. Disc contains two concentric rows of lenses and can be pushed up and down on handle; mirror fixed and not tilting. Made by Hunter, New York. See Plate V, Fig. 62. Formerly in possession of Dr. Noyes. Loaned by Dr. D. W. Hunter, New York.

12. *First Form of Loring Tilting Mirror:* See Plate V, Fig. 64. The little metal plate seen above is placed on the mirror to reduce the size of the latter. One Rekoss disc with two rows of lenses, as in 9, moved by cog-wheel. Made by H. W. Hunter, New York. Formerly property of Dr. Noyes. Loaned by Dr. D. W. Hunter.

13. *Earliest Form of Sector:* See Plate V, Fig. 72. Loaned by Mr. Alex. Shaw, New York.




8. *Lawrence's Binocular Ophthalmoscope:* With Loring Tilting Mirror. See Plate III, Fig. 57. Made by Bonschur & Holmes, Philadelphia. Loaned by Dr. H. I. Jessop, through Messrs. Bonschur & Holmes, Philadelphia.

## Electric Ophthalmoscopes.

1. *Schweigger's Electric Light Ophthalmoscope:* See Helmholtz Festschrift, 1889. Maker: Sydow, Berlin. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

2. *Dennett's:* Shown in drawing. See Transact. Amer. Ophth. Soc., 1885 and 1886.

3. *Meyrowitz's:* Attachable to any Loring Ophthalmoscope. Loaned by Mr. E. B. Meyrowitz.

4. *Wolff's Ophthalmoscope:* Received too late for exhibit. See Zeitschrift fuer Augenheilkunde, February, 1901.

## Refracting Ophthalmoscopes.

### LORING.

1. Mirror not tilting, early model. See Plate V, Fig. 44. Loaned by Dr. B. Joy Jeffries, Boston.

2. Early model, one Rekoss disc. See Plate V, Fig. 17. Made by Messrs. Tiemann & Co., New York. Loaned by them.

3. Early model. One Rekoss disc exposed. Mirror not tilting. See Plate V, Fig. 18. Made and loaned by Messrs. Tiemann & Co., New York.

4. Early model. See Plate V, Fig. 16. Made and loaned by Messrs. Tiemann & Co., New York.

14. *Latest pattern,* as made by Messrs. Bonschur & Holmes, Philadelphia. See Plate V. Loaned by Messrs. Bonschur & Holmes.

15. *Latest form,* as made by Mr. E. B. Meyrowitz. Loaned by Mr. Meyrowitz. See Plate V.

16. *Latest model,* as made by Messrs. Chambers, Inskeep & Co. See Plate V.

### ROTH.

1. Refracting Ophthalmoscope: Modification of Loring's latest. The revolving sector is replaced by a plate containing three lenses which moves automatically. Described in Klin. Monatsbl. f. Augenh., 1894. See Plate V. Loaned by Mr. E. B. Meyrowitz.

2. Improved model. Loaned by Mr. E. B. Meyrowitz.

3. Loaned by Messrs. Chambers, Inskeep & Co.

### KNAUER.

1. Refracting Ophthalmoscope: Two discs forming all combinations automatically. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

2. Loaned by Mr. E. B. Meyrowitz, New York.

### KNAPP.

1. *Knapp:* Two discs, the upper has one aperture and 13 concave lenses; the lower, one aperture and 13 convex lenses. The discs overlap. See Archives of Ophth. and Otol., Vol. III, No. 2, 1874. Loaned by Surg. Gen. Museum, Washington.

2. *Small Knapp Ophthalmoscope:* Single disc for lenses. Makers: Messrs. Tiemann & Co., New York. Loaned by them.

3. *Small Knapp Ophthalmoscope:* Single disc, one opening and

23 lenses, flat mirror. See Arch. of Ophth. and Otol., Vol. IV, No. 1, 1874. Loaned by Dr. H. Knapp, New York.

4. *Knapp:* Large disc ophthalmoscope, with crystal lenses. Disc 2 inches in diameter, containing 16 convex and 16 concave lenses, and one opening. Loaned by Dr. H. Knapp, New York.

KEYSER.

1. Very small refracting ophthalmoscope. See Phila. Med. Times, 1887-8, Vol. XVIII, p. 167. Loaned by Dr. Wm. Thomson, through Messrs. Bonschur & Holmes, Philadelphia.

HARLAN.

1. Combination of Loring, Knapp & Noyes. Two discs superimposed, one rotated by serrated edge, the other by cogwheel. Loaned by Messrs. Bonschur & Holmes, Philadelphia.

HIRSCHBERG'S.

1. See Deutsch. Zeitsch. f. Prak. Med., 1877, p. 353. Two Rekoss discs. Three mirrors, one large plane mirror, one large concave mirror, one small plane mirror set at angle. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

DUDLEY.

1. Two discs, one containing + lenses, the other — lenses; slightly decentered axes, so that one is moved on one side, the other on the other side of the mirror. Loaned by Dr. Dean.

DEWECKER.

1. DeWecker's Ophthalmoscope. One disc with 11 + Spher., and 13 — Spher. lenses. Similar to Loring's one disc Ophthalmoscope. Loaned by Dr. Casey A. Wood.

2. One disc with 20 lenses from + 0.5 to + 10 D. Converted by slide containing — 10.5 D. into — 0.5 to — 10 D. Loaned by Dr. C. H. Williams, Boston.

*Refracting Ophthalmoscope.*

1. Two small mirrors (concave and plane) reversible. Two revolving discs moved by cogs, one containing 10 convex, the other 10 concave lenses. Author not identified. French model. Loaned by Dr. F. M. Chisolm, Baltimore, Md.

*Jessop's Pocket Refraction Ophthalmoscope.*

1. See Brit. Med. Journ., 1887, pt. 2, p. 724. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

*Howe's Pocket Refracting Ophthalmoscope:* See Am. Journ. of Ophth., February, 1893.

1. Very compact. Loaned by Dr. Lucian Howe, Buffalo.

**Refracting Ophthalmoscopes with Cylindrical Lenses.**

1. *Burnett's* Modification of Loring's Ophthalmoscope. Two mirrors; attachment for cylindrical glasses. See Amer. Ophth. Society, 1885, p. 589. Loaned by Dr. Shallerson, through Messrs. Bonschur & Holmes, Philadelphia.

2. Callan's Ophthalmoscope, with Stokes constant axis cylinder. Loaned by Dr. Callan, through Mr. E. B. Meyrowitz.

3. *Parent:* Ophthalmoscope. Early form, with Wadsworth mirror. Loaned by Dr. Casey A. Wood, Chicago.

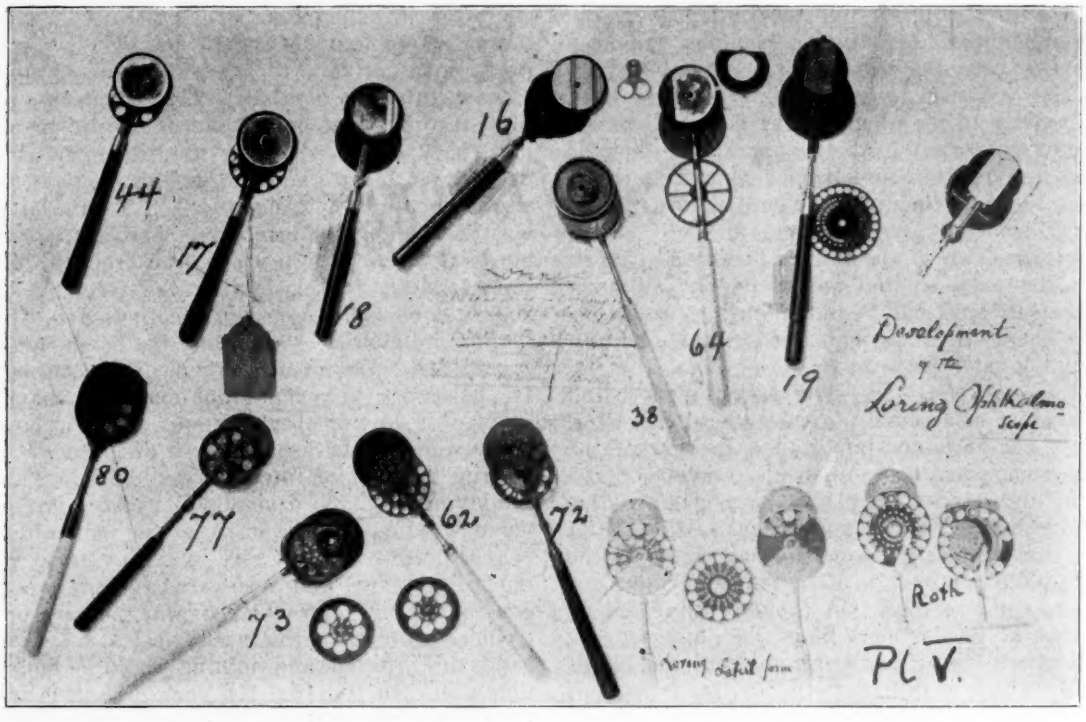
4. *Parent:* (Old pattern.) Loaned by Mr. E. B. Meyrowitz.

5. *Parent:* Contains spherical and cylindrical correcting lenses. See Rec. d'Ophthal., 1883, p. 628. Loaned by Dr. C. M. Culver, Albany, N. Y.

6. *Parent:* Made by Chambers, Inskeep & Co. Attachment with *cylindrical lenses.* Loaned by Dr. Casey A. Wood, Chicago.

*Boeckman's Combination Trial Case and Ophthalmoscope.*

1. The instrument consists of a handle and three forks into which the circular mirrors and the correcting glasses of small trial case can be placed. Very simple. Loaned by Dr. Boeckman, of St. Paul, Minn.




LANDOLT.

1. Early pattern. Loaned by Dr. Zimmerman, through Messrs. Bonschur & Holmes, Philadelphia.

2. Late model. See Bull. Soc. de Chir. d. Paris, 1876, Vol. II. p. 359. Loaned by Dr. Wm. Thomson, Philadelphia, through Messrs. Bonschur & Holmes, Philadelphia.

3. With Wadsworth Mirror. Loaned by Dr. Bane.

4. With Tilting Mirror. Loaned by Dr. Fox, through Messrs. Bonschur & Holmes.

FOX.

1. Early model. Loaned by Dr. Webster Fox, through Messrs. Bonschur & Holmes, Philadelphia.

2. One disc and additional sector. Wadsworth Mirror. Loaned by Dr. Fox, received through Messrs. Bonschur & Holmes.

JACKSON.

1. Two vertical slides with + and — spheres. Earliest form. Loaned by Dr. Jackson, Denver, Colo.

2. Improved form, circular tilting mirror. Loaned by Dr. Jackson, Denver, Colo.

3. Latest improved form, Loring tilting mirror. Loaned by Messrs. Bonschur & Holmes, Philadelphia.

MORTON.

1. Modification of Cooper's Ophthalmoscope. Contains chain of lenses instead of Rekoss disc. Also large plane and concave mirrors and small concave mirror set at angle. Made by Curry & Paxton, London. Loaned by Messrs. Tiemann & Co., New York.

2. Modified: Two inclined mirrors, plane and concave. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

3. American form, as made by Messrs. Bonschur & Holmes, Philadelphia. Loaned by them.

**Skiascopic Mirrors.**

1. Small, plane mirror according to Jackson. Makers: Messrs. Bonschur & Holmes, Philadelphia. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

2. Large plane mirror, with pupillometer on back. Maker: Sydow, Berlin. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

3 to 15. Thirteen varied forms of skiascopic mirrors. Made by Messrs. Chambers, Inskeep & Co., Chicago.

16. *Roth's Skiaskop:* With tape and correcting lenses. Made by Sydow, Berlin. Loaned by Dr. Harry Friedenwald, Baltimore, Md.

17 to 23. Seven forms of Brown Pusey's combination Ophthalmoscope and Skiascope. Made by Messrs. Chambers, Inskeep & Co., Chicago. Loaned by Dr. Brown Pusey, Chicago.

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**Morbid Changes in the Kidneys with Insufficiency of the Thyroid Gland.**—Blum has found evidences of pronounced interstitial nephritis in 36 out of 46 dogs whose thyroid gland had been removed. The other dogs died almost immediately with symptoms of acute tetany, before the nephritis had time to develop. This is the first time that morbid processes in the kidney have been pointed out as the direct result of the intoxication consequent upon the loss of the thyroid function. The intoxication was evidently connected with the processes in the intestines, and was thus an auto-intoxication.—*Virchow's Archiv*, clxvi, 3.

# EXAMINATION OF A GENITO-URINARY PATIENT BY THE GENERAL PRACTITIONER.*

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At the onset it is necessary to avow that the principal object of this paper is to obtain instruction. Through this instruction I hope to make valuable to the general practitioner the methods which study and experience have led me to employ in examining patients whose ailments come within the exclusive genito-urinary specialty. If incidentally to the confessed object it be shown that examination of the majority of genito-urinary patients can well be performed by the general practitioner, the purpose of this effort will be more than attained.

*Family History.*—As in all other diseases, the examination of a genito-urinary case, whatever its character, must begin with the history of the patient's family. Heeding a tubercular heredity, for example, will keep us alert to the greater possibility of a patient so stigmatized to fall a victim to genito-urinary tuberculosis. This is especially likely when he has acquired even a mild form of gonorrhea. At the opposite pathologic extreme we find neurotic proclivities reproduce themselves in genito-urinary neuroses. These may vary from an hysterical bladder to psychic impotence.

The importance which the family history has in all ailments is, however, so well appreciated by all practitioners that it need but be mentioned to recall its weight as a diagnostic and prognostic element, and as a guide to individual therapeutics.

*Personal General History.*—The patient's preceding ailments, whether of a constitutional or local character, are certainly not of minor importance, in view of the impress they may have made upon his resistance. His environment and occupation play a large part in contributing to chronicity and complications. It need but be recalled that a person exposed to malaria, or to the bites of infected mosquitoes, is often obliged to interrupt his treatment for gonorrhea. A book-keeper, standing at a high desk all day, is more likely than others to invite complications involving the scrotal contents. This holds equally, albeit of different etiology, for people engaged in occupations requiring great physical efforts. These mere examples, taken at hazard, will call to mind the many others.

*Genito-Urinary History.*—Precedent syphilis may be the direct foundation for involvement of the urethral adnexa, in which local treatment will be futile, unless supplemented by antiluetic medication. Residua of apparently cured previous gonorrhea must be always suspected. Heed must be taken of their possibly delaying success in the condition under consideration, and also of the possibility of recrudesence of dormant infection and alterations.

The individual history of each attack of a genito-urinary ailment must be minutely recorded, as each detail serves to assist not only in diagnosis, but also prepares one for possible intercurrences due to previous ailments, and renders intelligent treatment possible.

The many elements necessary to diagnosis, however, are too vast for consideration in a brief paper. They are being collated in a book now in preparation, entitled "Gonorrhea and Marriage." This will present them in convenient form and detail what experience has led me to adopt as a method of eliciting and recording them.

Besides, there is no need to dilate upon these matters now, as the general practitioner is conversant with the history of each patient whom he sends to the genito-urinary specialist for examination and suggestions regarding treatment.

## PHYSICAL EXAMINATION.

With these premises we are prepared to now consider, in as much detail as possible, the physical examination of the patient. In doing so, while not unmindful of the pedagogic value of the finer divisions of our present subject, time confines us to the consideration of the gross elements only.

*Preparation of the Examiner.*—Inasmuch as the most frequent genito-urinary diseases are of a contagious character, it is the practitioner's distinct duty to protect himself from that contagion, not only to preserve his professional usefulness, but also to avoid becoming a focus of infection to others. The convenience of observing every physical and chemical aseptic precaution is materially enhanced when the examiner is properly dressed for his work. The ordinary slit of the shirt-sleeves should be extended to reach 2½ inches above the olecranon along the arm, when flexed; the cuff should not be over 3 inches in width. So prepared, the sleeves can easily be folded, leaving the forearms bare well above the elbows. As every infectious step of an examination is followed by cleansing the hands, an inadvertent soiling of the forearm is remedied at the same time. If, however, such contamination occurred upon the sleeve of a shirt or operating-coat, it might be relegated to the time of the usual change of garments. In this interim the spot of infection would be forgotten while complying with the demands of urgent work. Then a nervous patient, apprehensive of the pain which a careful examiner will never give him, may grasp his arm at the infected spot and afterwards rub his eyes with the pus containing gonococci. Again, the surgeon may be troubled with an itching eyelid just at a time when his hands are infected, and nothing would be more natural, unless he had acquired the acme of self-control, than that he almost automatically relieve the eyelid with the infected sleeve.

With the arms bared, the ordinary garments should be protected by a suitable gown and apron, of which a number of desirable forms are made. The observations regarding sleeves apply to the operator's vest and trousers. When a gown or apron are soiled they can be easily slipped off and substituted by clean coverings.

Surgeons so unfortunate as to need aids to sight should not wear nose-glasses during their work. Without reflecting upon any of the devices which make it "impossible for eye-glasses to slip," the fact is, that all with which I am acquainted do slip at the most inopportune moments. The annoyance at the interruption is likely to militate against thoroughness, if the examiner is obliged to continue with defective eyes, or he will, if so engrossed in each effort as he should be, forget himself and replace the glasses with infected hands. For these reasons no attempt should be made to examine a genito-urinary patient unless defective vision be corrected with firm spectacles. But even when the ex-

* Read at the Fifty-second Annual Meeting of the American Medical Association, in the Section on Practice of Medicine, and approved for publication by the Executive Committee of the Section: Drs. Frank Billings, George Dock and J. M. Anders.

aminer is blessed with emmetropia, it is always wise for him to protect his eyes from infection by wearing plain spectacles.

*Preparation of the Patient.*—The ideal examinations are made in all cases early after arising from bed, and before the patient has passed urine. Unfortunately, for self-evident reasons, this is not always possible in private practice. The best substitute, therefore, is to instruct the patient to hold his urine as long as possible before the time appointed for the examination. The other preparations of the patient will be mentioned in each special step of the examination.

*Positions of Examiner and Patient.*—The patient's physical condition permitting, he stands before the examiner. The latter is seated, with his back to the light, which, falling fully upon the patient, reveals many points which might not be discovered otherwise. When the patient is feeble or likely to faint, the examination may be conducted while he is lying on a bed, or, better still, on a firm operating table.

When standing before the physician, the patient is ordered to drop his trousers and drawers to his knees for inspection of the genitalia, the thighs, the abdomen and chest, if need be. The appearance of an eruption on the latter may expose previously unsuspected syphilitic infection. The drawers, shirt and undershirt are then carefully examined.

*Stains.*—These, when present on the garments, will often serve materially as diagnostic guides. Briefly, the most frequent of them may here be described.

The shape is: Circular or ovoid, in urethral discharges; irregular diffusive, in after-dribbling of urine from stricture; shred-shaped or band-like, in seminal discharges.

The edges are: Sharply defined, from excess of urethral secretion; undefined, in dribbling after urination; elevated, in seminal discharges.

The size is: Small, from excess of urethral discharge; large, in dribbling after urination; variable, from seminal discharge.

The color is: Homogeneous throughout, in excess of urethral secretions; darker at center than at periphery, in after-dribbling; deeper in spots, owing to varying thickness, from semen.

When no crass evidences of disease, further than stains on the garments are found, or when they are so commingled as to prevent their distinction, microscopic examination will reveal their character. If the stains have dried, they may be moistened with distilled water and the spot then carefully rubbed upon a cover-glass for staining and mounting.

*Inguinal Glands.*—The most convenient manner of examining these glands is to pass the finger along the inguinal region. Any enlargements, however small, should be recorded, whether they preceded the genito-urinary affection or whether they came after it. The early recognition of their implication may enable prompt treatment and save the patient much unnecessary suffering. The wisdom of heeding enlargements of these glands is graphically portrayed by A. Cooper[1] In an abstract[2] of his article the following appeared:

> In typical cases and when the condition has reached its height a group of glands—from three to six or more—can be felt in each groin. * * * Besides being multiple, the glands are also indolent and separate; that is, they are not painful when handled, and can by palpation be clearly defined and isolated from the others. They are freely movable beneath the skin, are of moderate size, and more or less hard. Both sides are generally affected, but occasionally one groin alone may be involved, and that not always on the same side as the specific lesion. Although multiple indolent glands form one of the most important features of primary syphilis, it must be remembered that they are not in themselves proof of it, and that an apparently typical condition of the groins is sometimes due to other causes, more especially in persons whose glands are unusually susceptible. Among such cases may be mentioned severe gonorrhea, urethral irritation from too strong injections or other injury, irregular herpes, severe balano-posthitis, and tuberculosis. The diagnosis will depend on the history, on the absence of an indurated primary lesion, and on careful watching throughout the incubation period of syphilis.

1. London Lancet, April 13, 1901.
2. N. Y. Med. Record, April 27, 1901.

Before proceeding further it will be well to note whether there is a discharge of pus from any part of the penis. In such case it will be well to cover the organ with a gauze bandage so that in continuing the examination none of the discharge be carried on the surgeon's hands, to other parts of his own or patient's body.

*Genitalia.*—The scrotum should be inspected and palpated in all its parts. It may be pendulous in a generally debilitated condition; drawn up tightly by fear, or by the reflex influence of a renal disturbance; it may be distended or distorted by hernia, epididymitis, orchitis, malignant or benign diseases of its contents, hydrocele or varicocele. Its integument may be the seat of extended intertrigo, or other skin lesion, from perspiration or drugs. In swellings within the scrotum palpation should be supplemented by transillumination. This can be most satisfactorily done by aid of the urethroscopic light, which will be mentioned later on.

The testicles can be most conveniently palpated by what is tantamount to balancing their lower poles upon the inner tips of each of the ring fingers and passing the thumb-tips along the anterior surface of the scrotum and the index and middle fingers along its posterior surface. The size, shape and consistency of each testicle can thus be easily outlined.

The epididymis can be examined in the same manner at first, and any abnormality more closely studied by taking the testicle in the hand of the opposite side, while palpating the epididymis with the fingers of the hand at the same side.

The spermatic cords can easily be palpated, except when the testicles are tightly drawn up, or when the cords are thickened, or are the site of a large hydrocele. Ordinarily, grasping the testicle with the fingers of the same side and gently drawing it downward, enables the fingers of the opposite hand to palpate the vas deferens and the vessels of the cord.

The prepuce's most frequent abnormalities vary between slight fissures at the muco-cutaneous margin, to pronounced gangrenous paraphimosis. When the foreskin can be retracted, all its parts should be examined for posthitis, chancre, chancroids, condylomata, etc.

The glans is sometimes found deformed from arrested development, due to a very tight, thick or inelastic foreskin, or from a badly performed circumcision. It may be the seat of the same diseases that affect the foreskin; it may have erosions from inspissated smegma or from small stones formed of urinary salts, or parts may be destroyed by devastating chancroid.

The meatus in acute urethritis is often much reddened and swollen. This gives its lips a pouting appearance. The meatus may also be the seat of chancre, chancroid, or condylomata.

EXAMINATION OF THE DISCHARGE.

The discharge from the meatus may vary from a free, thick, greenish-yellow, bloody flow, to a mere excess of watery moisture, expressible from the urethra with much difficulty. When the latter obtains, it is well not to rely upon the patient's untaught manner of producing this evidence of disease. To demonstrate the presence of such a minimal excess of moisture, the examiner takes the left corpus cavernosum with the fingers of the left hand, and the right corpus cavernosum with the left thumb. The left little finger is thus turned to the patient's pubis. In so holding the penis, care is taken that neither the thumb nor the fingers project below the corpora cavernosa. The right index finger is then semiflexed and its middle phalanx pressed through the scrotum to the lower margin of the symphisis pubis. As it is drawn forward it compresses the urethra tightly and so propels to the meatus any excess of moisture.

Fig. 1.—Convenient sleeve for exposing arms for genito-urinary work.

The difference in the color of the discharge, from the stain it makes upon the patient's garments or the cotton he wears upon his glans, is noteworthy. Observations subsequent to verification of these differences, as formulated by Diday, lead to the following conclusions: If the discharge is colorless the stain is starch-like; if opaline, it is grayish; if white, it is a yellow stain; yellow, a green stain; a green discharge, a reddish-brown stain, and if the discharge is red there is a mottled dark-brown stain. In noting the color of these stains, however, heed must be taken of stains that may be due to the color of the injections which the patient has used.

Whatever the quantity of the discharge, a specimen for microscopic examination must be taken by a platinum loop, which has been rendered incandescent in a Bunsen or alcohol flame and allowed to cool. The smallest possible quantity of the discharge so taken is then quickly and as thinly as possible spread upon a cover-glass, which has been cleaned and drawn through the flame just before use.

The conduct of the specimen merits attention. Thus a urethral discharge is easily spread, a prostatic discharge is inclined to roll itself into large tenuous lumps, as if to defy spreading; a discharge from the urethral crypts and glands forms small obstinate hillocks, and a discharge from the seminal vesicles often conveys the sensation of grit between the loop and the cover-glass.

After the specimen has been taken, it is left under a bell-glass until thoroughly air-dried. With an ordinary urethral discharge this may occur in from 3 to 5 minutes; with very thick prostatic discharges this may require 24 hours. When air-dried the specimen is fixed by drawing it through the flame two or three times.

Fig. 2.—Palpation of kidney. Guyon's method.

While the cover-glass is still warm, a saturated solution of eosin is dropped upon it. It is then held high over the flame until the alcohol of the eosin solution begins to evaporate. The specimen is then washed and rewashed until, stood on edge upon bibulous paper, the water passing from it is entirely colorless. The specimen is then stained for 5 minutes with a 2 per cent. solution of methylene blue. It is then again washed until the water flowing from the glass is entirely free from color. The specimen may then be gently dried with bibulous paper, or, better still, left to dry under a bell-glass. When thoroughly dry it is ready for mounting in balsam for examination and preservation.

The microscopic findings in the discharge may be conveniently arranged into: 1, variation of the normal constituents, such as increased mucus and epithelium; 2, bacteria whose presence may explain the pathologic products, and 3, the pathologic products—pus corpuscles.

in severe cases with blood, and in chronic ones with eosinophile cells.

Naturally the diagnosis is predicated upon the class of bacteria found. And if the discharge is the sole feature of the disease, the treatment of the case is governed by the kind of bacteria discovered. In a general way it may be said that, when the gonococcus is the only provocative element, irrigations with permanganate of potash, as elsewhere described,[3] serve in the vast majority of cases.

But when other microbes are found, resembling, or which perhaps really are, colon bacteria, mercuric bichlorid alone, or combined with potassic permanganate will be required. When the specimen, stained as before described, contains no perceptible bacteria, it will be wise to stain another with carbol-fuchsin, and treat it as are the specimens examined for tubercle bacilli. This precaution may lead to the early discovery of a genito-urinary tuberculosis, before it has invaded the deeper genitalia. A word more regarding the gonococcus. On several occasions I have expressed the view that there are probably numerous forms of the gono-

Fig. 3.—**Palpation for prolapsed kidney. Goelet's method.** (From *Medical Record*, June 1, 1900.)

coccus. Our present instruments of precision have not yet enabled us to definitely distinguish any such differences. Until they do, further experiments with cultures will probably show that some gonococci flourish on one medium and die on another. When expressing this opinion, purely from a clinician's viewpoint, I was unaware of the work being done by Dr. A. Williams, assistant bacteriologist of the New York Board of Health, who kindly wrote on May 21:

In reply to your note of the seventeenth, I can as yet make only the following statement in regard to work done by me on the gonococcus.

1. Certain gonococci grow well on 2 per cent. peptone agar from the original pus and continue to grow well on this medium after being obtained in pure cultures.

2. Certain gonococci grow poorly upon 2 per cent. peptone agar when planted from the original pus, and immediately after isolation in pure cultures; but after a number of culture generations on this medium, they grow as well as those of the first group.

3. Certain gonococci do not grow upon 2 per cent peptone agar from the original pus, neither will they grow upon it immediately after isolation in pure cultures unless very large quantities be inoculated. Even then they grow spasmodically on this medium.

This emphasizes the hope that precise differentiation, and through it the selection of the appropriate remedy in each case, is less Utopian than might at first appear, It also tends to explain why in a certain case or series of cases, mercurol, argentamine, argonin, protargol, etc., will abort a most severe attack, while in others the selected drug fails.

As the scope of the present object, however, excludes therapeutic considerations, except when necessary to

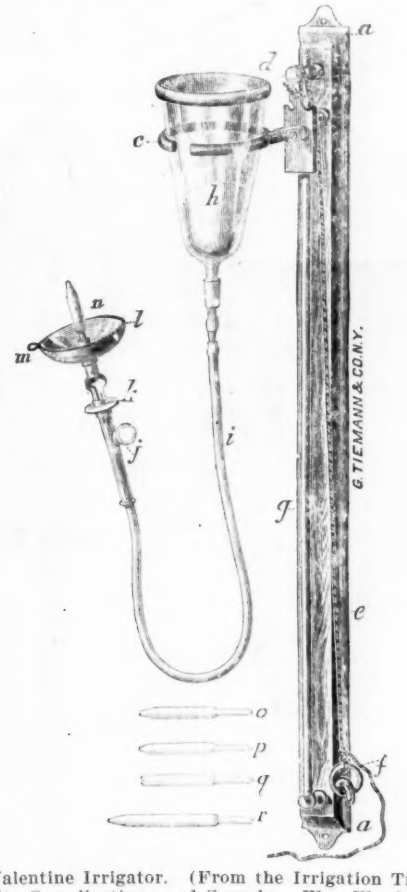


Fig. 4.—Valentine Irrigator. (From the Irrigation Treatment of Gonorrhea, Its Complications and Sequelæ. Wm. Wood & Co.)

elucidate a diagnostic measure, we may rest at the above memoranda.

## URANALYSIS.

Such detail as this division of the present subject merits would make a respectable volume, if nothing were cited but the names of the authors who have written upon it. Therefore, only the merest gross outlines of the urinary examination can here be mentioned. In this the general practitioner's often necessarily rapid work will be considered.

Lest extraneous substances become mixed with the urine it is well to clean the meatus, the glans and the foreskin with cotton soaked in bichlorid (1-6000) before asking the patient to empty his bladder. In ordinary, rough office-work the 3-glass test suffices. For convenience, I have, for a number of years, been using 12-inch ignition tubes instead of the glasses or beakers usually employed. The difference between these tubes and those sold as "Valentine urine-tubes" is only one of price. These tubes, whose clear glass gives the exam-

3. The Irrigation Treatment of Gonorrhea; Its Local Complications and Sequelæ.

iner a column of urine easily inspected, has other advantages, which will become evident in further consideration. The tubes hold about 175 c.c. (fl. ℥vi).

Whenever possible it is well to conduct an examination after the patient has held his urine for at least three hours. As said before, the ideal examination is made when the patient has not urinated since the night before. For more thorough work it is advisable to order the patient to bring the entire urine for the preceding 24 hours in eight-ounce bottles, each one labeled with his name, the date and the hour at which the urine was passed. A memorandum of the food, drink, drugs, mental and physical exercise taken in the intervals will often explain many abnormalities encountered.

The patient is ordered to pass about 3 ounces—100 c. c.—of his urine into as many tubes as he may need to empty his bladder.

*The first specimen* may be crudely assumed, in the

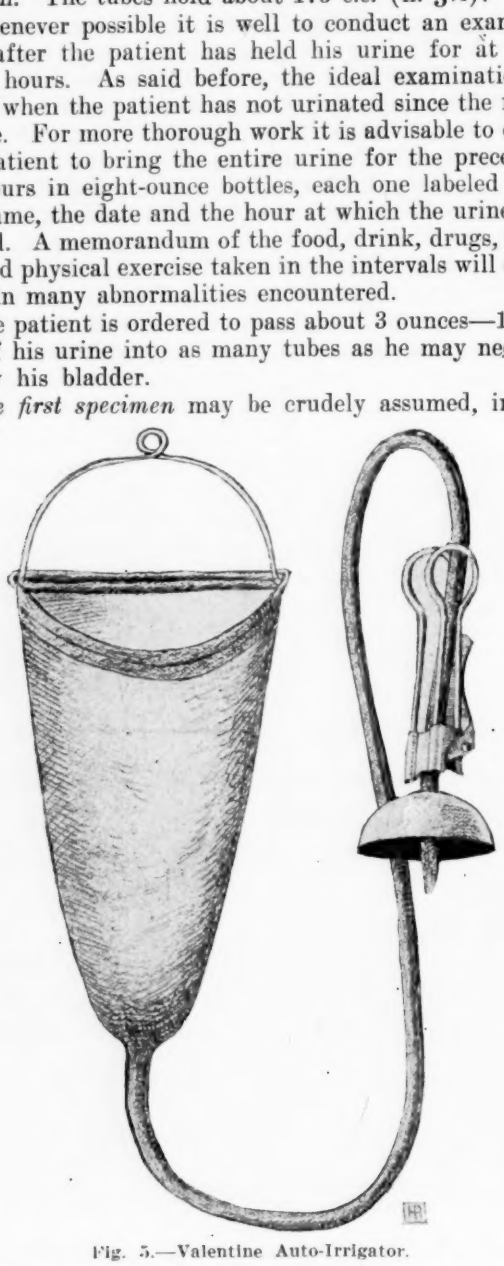

Fig. 5.—Valentine Auto-Irrigator.

average case, to contain all the washings from the anterior urethra.

*The second and subsequent specimens* of this urination may be crassly taken as carrying any abnormal additions that are detached from the bladder-walls.

*The last specimen* voided may be assumed to contain such additions as can be expressed from the adnexa of the posterior urethra—prostate, seminal vesicles, etc.—and the posterior urethra itself, by the final extrusive efforts—the "coup-de-piston" of Guyon.

Lest a false impression be conveyed to junior practitioners by what is here said about the macroscopic examination of the urine, it must here be emphasized that nothing but the crudest outline is now attempted. For ordinary purposes, however, the plan designated and the inferences adduced will suffice.

Having obtained the specimens, it next behooves us to study the transparency of each one; and then the "floaters" it contains. When this term was introduced by me it was with the reservation that some of the "floaters" do not float, but sink rapidly or drop to the bottom of the tube. The forms of the "floaters," their dimensions, their conduct and the pathologic significance of each, merit separate study.

The transparency of the urine may be impaired most frequently by phosphates and pus. When phosphates cause the turbidity, the addition of nitric acid will clear the urine with or without the evolution of gas bubbles. When pus causes the turbidity, a saturated solution of caustic potash added to the urine makes it at first assume a syrup-like consistency. If the tube is then twirled, in a species of imitation of the centrifuge's work, a ropy agglomeration is formed. This, Donné, who devised the test, called "rotzig." For some reason this German forcibly descriptive adjective seems less gross than its English translation "snotty." Even the best dictionaries do not give us a more acceptable synonym. The other causes of impaired transparency are subjects for finer examination.

The manner of passing urine is often pathognomonic. Thus the neurasthenia which obtains in the majority of genito-urinary affections may prevent the patient from urinating at all in the presence of others, or even when he suspects that another may know of his attempt to urinate. This, too, may cause interruptions in the force of the stream and in its caliber, or may compel its entire interruption. It may be accepted with Wossidlo[4] than any aberration in the manner of urinating, to indicate a pathologic change in the urethra or its adnexa, must be permanent. The most frequent aberrations, aside from those of neurotic origin, are, difficulty or delay in starting the stream, which indicate prostatic enlargement, deep stricture, or a growth within the bladder; reduction in the size of stream, evidencing stricture; interruption of the stream—"stammering urination"—suggesting prostatic enlargement, a growth or foreign body in the bladder; or, dribbling after urination, possibly due to beginning prostatic enlargement, but oftener to stricture.

In extreme cases dysuria, due to any urethral impediment, may compel the patient to squat on the floor, in order to supplement abdominal pressure with his thighs against the belly, so that he may thus plainly force out the few drops which give but partial relief to his overdistended bladder.

The other physical and chemical characteristics of the urine itself are proper subjects for the practitioner's detailed laboratory work, but their discussion has no place in a mere outlined effort. The same applies to the microscopic examination of the urine. In this connection, however, it will be permissible to note that almost universally too little heed is paid the epithelia found in the urine. As Heitzmann[5] has so frequently demonstrated and as clinicians, I among them, have so often occasion to confirm, the recognition of the epithelia found is, in the majority of cases, sufficient to indicate the location of the disease.

### FURTHER PHYSICAL EXAMINATION.

In similar rough outlines as the other points are discussed, the further examination of the patient may now be considered. The kidneys are not readily palpable in health. The two ways experience has led me to prefer are:

1. In Guyon's technique the patient is placed upon

4. Wossidlo: Die Strictureu der Harnröhre und ihre Behandlung
5. Heitzmann: Urinary Analysis and Diagnosis by Microscopic and Chemical Examination.

his back, his head comfortably supported, but his shoulders at no higher level than his buttocks. The knees are drawn up to relax the abdominal walls. The physician's hand of the opposite side is passed under patient's back, until the tips of the fingers are exactly within the lowermost costo-vertebral angle. The patient is ordered to inhale deeply, then to fully exhale; at the conclusion of the latter act the fingers of the hand of the same side are pushed as far as possible beneath the ribs, as closely to the kidney as possible. Then the fingers of the other hand are made to produce sharp contractile motions, giving the kidney a forward impetus. If it is enlarged or displaced the fact is recognized by the fingers upon the abdomen.

When the patient is very thin the kidney may be grasped with one hand, the fingers upon the dorsal region, the thumb on the anterior superficies.

2. Goelet's method[6] is especially applicable in prolapse of the kidney. The patient is placed erect, his buttocks resting against a firm table. The hand of the opposite side grasps his renal region firmly and the fingers of the opposite hand press backward and upward on the same half of the abdominal wall. As the prolapsed kidney is so replaced, it passes between the thumb and fingers of the other hand, and is thus readily recognized.

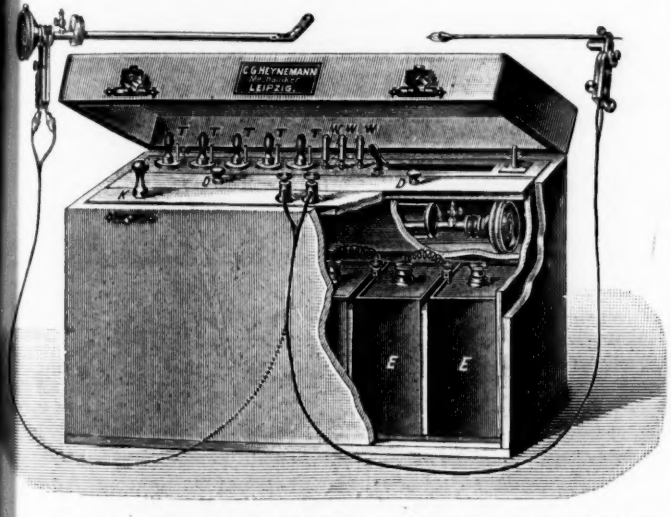


Fig. 6.—Kollmann and Wossidlo's modification of the Valentine urethroscope.

The capacity of the bladder is approximately gauged by the amount of urine passed in the morning, the patient not having urinated since the night before. A more exact estimate is made by filling the bladder with a boric acid solution to the utmost of comfortable distension and then allowing the solution to escape into a vessel for measuring.

The amount of residual urine is determinable only by catheterization immediately after the patient has expelled all the urine he can, without such aid.

The seminal vesicles can but rarely be felt in health. The patient is preferably placed on his back, as for renal palpation. The left foot rests upon its external margin so that its hollow may comfortably receive the heel of the right. The knees are then well drawn up and the hands lightly laid upon the chest. Previous to placing the patient in this position, the examiner has assured himself that his index finger has no projecting nail and consequently no sub-ungual space. He then coats the finger with the following mixture:

6. N. Y. Med. Record, June 1, 1901.

| | | |
|---|---|---|
| R. | Copal | 2 |
| | Venetian turpentine | 4 |
| | Sulphuric ether | 100 |
| | Collodion | 100 |
| | Acetone | 8 |

This dries almost instantly and forms a perfect sheath in nowise compressing the finger or obtunding its tactile sense. The finger so protected is then liberally lubricated. For this purpose I have for the past ten months used Synol soap, first presented to the profession by Goelet in June, 1900. The finger, coated and lubricated, is held aside, while the left fingers take the scrotum and penis out of the way of being possibly soiled with the lubricant. The hairs about the anus are then separated with the other fingers of the right hand, and its prepared index finger inserted into the rectum, not with gyratory motions, but directly upward and slightly to the right. The other fingers are closed upon the palm, and the thumb extended to lie as high up as possible along the left side of the scrotum. The left fingers then release the external genitals, and are curved upon the vesical region, pressing it down towards the examining finger in the rectum. Meanwhile the backs of the closed right fingers press the perineum upwards, while the right wrist is held as straight as possible and the elbow is approached to the level of the table. The finger tip passes the prostate and beyond it, and to its outer sides it encounters the seminal vesicles. When enlarged these are distinctly felt; in health, however, as mentioned before, they are often very difficult to outline.

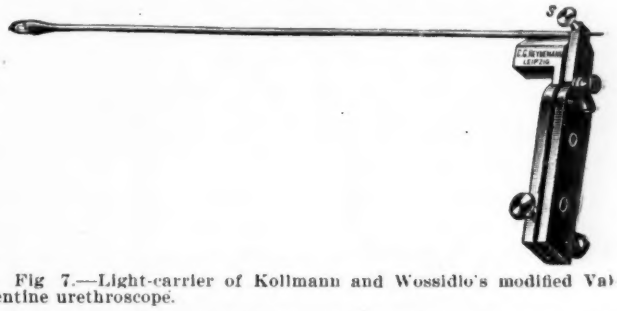

Fig. 7.—Light-carrier of Kollmann and Wossidlo's modified Valentine urethroscope.

The prostate is explored in the same manner as are the seminal vesicles. It differs, however, in being always discernible, although in very great enlargements its entire outlines may be beyond the finger's reach. There are cases in which the prostate projects further in the direction of the bladder than it does towards the rectum. In these the cystoscope is required for diagnosis.

Cowper's glands are never tangible in health. In disease, however, they project forward in the line of gular ligament and then can be readily felt in the perineum. In some cases the abscess presents as far forward as the peno-scrotal angle. Before its full development Cowperitis is usually felt at only one side of the raphè. The tense general swelling that follows may so extend to both sides as to make the gland originally involved indistinguishable.

It is wise to supplement rectal exploration of the urethral adnexa with gentle massage, so as to express some of their contents. As these escape from the meatus a minute quantity may be taken on two cover-glasses for microscopic examination. These specimens will require much longer time for drying than do those emanating from the urethra. After they have dried one specimen should be stained with eosin-methylene and the other with carbol-fuchsin.

Palpation of the urethra is performed by taking the

penis in the left hand, as outlined in connection with the method of obtaining a urethral specimen. The tips of the right fingers then feel all parts of the palpable urethra, to discern any general thickening of its walls, any localized swelling, e. g., peri-urethral abscess, or the presence of foreign bodies, c.g., so-called urethral calculi.

Previous to sketching examinations that require ingressions into the urethra, it is well to recall the need of aseptic work, which, if anything, is more necessary here than in other parts of the body. While conceding that absolute asepsis of the urethra is not obtainable, this does not excuse omission of any detail that may reduce the danger of carrying infection to uninfected parts. The technique thereof is not difficult, as I endeavored to show in a paper[7] read before this body last year. It may be summed up as follows: 1, cleansing the meatus, glans and prepuce with cotton soaked in bichlorid 1-6000; 2, cleansing the urethra with boric acid by means of the office irrigator, or the easily portable auto-irrigator; 3, filling the cleansed urethra with 5 per cent. iodoform suspension in glycerin, and, after instrumentation, 4, repeating the urethral irrigation.

In exploration of the urethra the soft, flexible bougie-á-boule, with an almost rectangular shoulder, is the only instrument which can serve for tactile exploration. It is the essentially diagnostic instrument; rigid instruments are for therapeutic purposes exclusively. Omitting all argument hereon, it will suffice to remember that many a urethra will easily and smoothly permit the passage of a steel sound of large caliber. But when a properly constructed bougie-á-boule, even one or two sizes smaller, after having been inserted into the urethra, is deftly whipped out of the channel, it reveals impingements which the rigid instrument could not. I repeat, therefore, that a rigid sound or dilator is a therapeutic instrument, while the softer instrument is the only one that can serve for diagnosis.

Urethroscopy with modern devices is now as much a procedure for the general practitioner as it is for the genito-urinary specialist. I may be pardoned for expressing a decided preference for the urethroscope upon whose simplification I have spent much time and study. Briefly described, it consists of a box containing all that is needed for urethroscopy, viz., dry cells for illumination, tubes for various calibers of the urethra, lamps which snugly fit along the urethral tubes, and applicators to carry cotton for cleansing the urethra and for such topical remedies as the conditions found may require.

The newest form of this instrument is the one I have the honor of showing. It is a modification of the Valentine urethroscope, by Prof. Kollmann, Leipzig, and Dr. Wossidlo, Berlin. The original device, as presented by me before this body two years ago, was, as I then emphasized, a modification of the Oberländer urethroscope. Kollmann and Wossidlo further modified this device, rendering it more convenient for its work. These eminent German scientists, in doing me the honor to improve upon this device, did not, however, eliminate my name therefrom. A signal convenience is in the ingenious addition to the case, of a Nitze irrigating cystoscope, whose lamp is of such low tension that the same cells used for urethroscopy can be employed for visual examination of the bladder.

The technique of urethroscopy is self-evident on examination of the instrument. Naturally, to distinguish the various pathologic conditions some experience is required. But the experience necessary for good diagnostic work is far less than that needed for any other of the instruments of precision, such as the opthalmoscope, the laryngoscope, etc.

Cystoscopy implies all that has been said of urethroscopy, except that its technique entails considerable training and much practice. It involves catheterization of the ureters in some cases, a process demanding the acme of that skill which experience gives. It naturally is applicable only when the mouths of the ureters can be entered.

Cultures and inoculations are mentioned here only to recall the cases in which, without them, the examination can not be completed. They require elaborate laboratory facilities, which are necessary addenda to the specialist's office, and to which but few general practitioners can devote the large amount of time and attention they demand.

Cryoscopy, as its inventor, Raoult, defines this new method of urinary examination, is "the study of dissolved bodies, based upon the observation of the point of congelation of their solutions." As cryoscopy, however, is a laboratory method, its consideration has no place in a purely clinical study.

SUMMARY.

Throughout this effort it has been my desire to emphasize the following points:

1. All genito-urinary examinations should be painless.
2. The operator should conduct no examination unless his arms are bared to above the elbows and his clothing protected by a gown and apron.
3. During every genito-urinary examination the physician should protect his eyes with spectacles—not eyeglasses—even if he has no visual defect.
4. Ideal examinations are made in the morning, before the patient has passed his first urine.
5. The amount and character of a urethral discharge can be estimated only by correct technique in expressing the urethral contents.
6. The color of a urethral discharge changes when it dries upon the patient's garments.
7. The meatus should be cleaned before passing urine for examination.
8. The manner of urinating is often pathognomonic.
9. The epithelia found in the urine are indicative of the locality of the lesion.
10. Examination of the urethral adnexa is a necessary part of the steps for complete diagnosis.
11. No instrumental ingression of the urethra should be attempted without most thorough efforts at rendering it aseptic.
12. The technique of striving at urethral asepsis is neither complicated nor difficult.
13. The soft bougie-á-boule is the only instrument that can be used for tactile exploration of the urethra: it is purely a diagnostic instrument; the rigid sound is wholly a therapeutic instrument.
14. Urethroscopy with a modern instrument is not difficult.
15. The general practitioner is perfectly competent to examine the vast majority of genito-urinary cases.
16. Such examinations only exceptionally require extraordinary skill or a large armamentarium.
17. The pathology of genito-urinary disease does not materially differ from that of other affections.

31 West Sixty-first Street.

7. Surgical Asepsis of the Urethra and Bladder. JOURNAL A. M. A., Jan. 12, 1901.

# THE UNVEILING OF THE CELL.*

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CHICAGO.

In the kind invitation of your secretary to read a paper before this Academy, it was suggested that a subject of general interest be chosen rather than one involving a very technical description of some single especial research. On thinking over the few topics upon which I might with fairness venture to address you, it occurred to me that perhaps one dealing with the newer knowledge of the cell might be as acceptable as any. I have decided to ask you, therefore, to permit me during the next half hour or more, to place before you some examples illustrating the trend of cellular research, to outline to you a few of the results thus far attained, and to indicate along what lines of investigation work is likely to proceed in yielding us the discoveries that the near future has to reveal.

I may be permitted to say in the beginning that I regard the development of the cell doctrine as one of the most brilliant and most important generalizations of the century just passed, as one which has given us a clearer conception of the general organization of animals and vegetables than any which preceded it. I do not wish, however, to be understood as joining the ranks of those extremists who, traveling always on the purely cellular highway, refuse to consider, as practicable or desirable, progress toward a knowledge of structure and function along any other road. To me such a prejudged attitude is but little less condemnable than that of propogandists of another type, who, adding the sin of ingratitude to the defect of hemianopic biologic vision, declare not only that the study of cells in themselves offers no hope for the future of science but also that such study has done little or nothing for it in the past. Both these attitudes are unfortunate; but critical minds, incapable of occupying either, must fain be charitable with the mistakes to which the enthusiasm of special investigation leads. It is perhaps enough that special investigators supply us with new facts and set up for us new theories; if sometimes one of them loses sight of the wood on account of the trees and another, occupied with the wood, forgets that there are trees, we need not despair, for men of a more philosophic turn will from time to time preserve for the majority of us the privilege of seeing both.

According as one looks upon the cell as an elementary organism only, or as an integral and determined part of a higher organism only, he will tend to gravitate to the one or the other pole of partisanship; it is only when he recognizes that the cell occupies a double position that the investigator is likely to keep his mind in that equatorial plane in which justice can be done to each of the two views.

Purely cytographic studies have, since the work of Schleiden and Schwann in histology and of Virchow in pathology, steadily progressed in volume and in penetration until one wonders if the limit has not almost been reached. That this is not the case, is, however, evidenced by the fact that the journals continue to pour out cytological articles, and new monographs dealing with the problems concerned are more numerous than ever. The cytological school, which, especially with the chromosmium-acetic mixture, did so much to give us data concerning the characters of nuclei and the changes which they undergo during division, has been followed by another group of investigators who, using sublimate and other fixing reagents and finding centrosome and archiplasmic radiations in the protoplasm have constructed theories of protoplasmic structure which exceed in intricacy the doctrine of the chromosomic architecture of the nucleus. Again, the method of Golgi has given us an entirely new conception of the extent and complexity of branching to which the protoplasm of certain of the cells of the body is subject; and a host of special methods have been devised to demonstrate special features in the cells of the various tissues of the body.

Opinions as to ultimate structure have, as everyone knows, been most disparate and the champions of the granule-theory, the thread-theory, the sponge-theory, the foam-theory, vie with one another for supremacy. Physiologists, like morphologists, indulge in conceptions of plasomes, biophores, pangenes, micellæ, bionten, and physiologic units of other sorts intermediate between the cell as a whole and the ultimate chemical substances of which it is made up. One of the important advances recently made consists in the general recognition by histologists of the necessity of distinguishing sharply between the constituents of the cells as they actually exist in nature and the modifications of these which are to be met with in the rigid, stained or unstained cadavers of cells which we study under the microscope in ordinary histological fixed preparations. Thanks to the researches of many men in many lands and especially, recently, to those of the botanist Fischer of Leipzig, we have been made to realize what we have known all along but did not fully appreciate that, when a fixing reagent acts upon a cell, changes occur which in a physical and chemical sense are of a very gross type, fully as gross as those involved in the transformation of a raw egg into a hard-boiled one. These changes vary with the character and concentration of the fixing reagent employed, and with the nature of the substance in the cell acted upon. Thus it has been shown that substances like serum, serum globulin, nucleo-albumin, and nuclein, when in solution are precipitated by various fixing reagents in a *coagulum* of some form, while substances like deutero-albumose, proto-albumose, peptone, nucleinic acid and hemoglobin tend to be thrown down in the form of *granules*—the thinner the solution, the finer and more regular, as a rule, the character of the granulation.

Curious results have been obtained by Fischer on injection of pith with solutions of albumose or other substances and subsequent fixation. On microscopic examination of sections of the pith he could demonstrate exquisite granule- and coagulum-pictures, some of which were almost indistinguishable from the appearances of centrosome and archiplasmic radiations occurring in ordinary cells.

As a consequence of these investigations, there has, and with right, been a strong reaction against those views which strive in spite of apparently irreconcilable contradictions to conceive of the structure of living protoplasm as being monomorphous. The "living substance" as contrasted with the "non-living" paraplasm is presupposed in Altmann's doctrine, in Flemming's, in Bütschli's, to be of some form, alteration of which is incompatible with the maintenance of its life. Berthold's theory alone, as Fischer has emphasized, is consonant with a conception of a polymorphism of the protoplasm, since his idea of an emulsion is not irreconcilable in its presuppositions with changes in morphology. Berthold himself believes that mikrosomes, which may be some-

* Read before the Buffalo Academy of Medicine, Nov. 19, 1901.

times solid, amorphous or crystalline deposits, sometimes drop-like formations, are like vacuoles, oil droplets, etc., to be regarded as products of "separation" in the protoplasmic emulsion. In such instances there would be polymorphous pictures during life as well as after fixation. On the whole it is fair to say that there is a growing belief in the polymorphism of protoplasm and in a protoplasmic constitution represented in large part by substances in colloidal solution.

The scramble to escape from the tumbling edifice of the monomorphists has in some quarters amounted almost to a panic. Some of the former occupants are willing not only that the structure should vanish as rapidly as possible, but would gladly deny ever having had any connection with it, and especially ever having received any benefits from it; some indeed would go so far as to discredit even every tool utilized in the construction and to hint that the methods of the microscopic cytologist are doing nothing and never will do anything to help solve the problems of living organisms! If in fixed preparations we have to deal merely with precipitates and coagula, then how, they ask us, can the microscopic pictures of these things be of any value to us? But here a calmer consideration of the situation will save us from so gross an injustice. One has only to recall the practical benefits derived from histologic and cytologic studies of fixation pictures to immediately realize that the studies in which they have been employed have been richly rewarded. Nissl's idea of the constancy of what he calls "equivalent pictures" is here of distinct value. The details of the phenomena of inflammation, degeneration and regeneration, or of tumor-formation could never have become known without these methods. The degree of malignancy of a tumor can often be directly determined by a microscopic examination of its elements. Our knowledge of that great group of diseases in which alterations in the number and character of the corpuscles of the blood occur has been built up largely through cytologic study. The studies on the classification of bacteria, the development of bacteriology in general, and particularly the investigations on the relation of bacteria to cells of the body owe a large debt to the same methods. So many important examples will immediately leap to the eyes of any one who will give the subject a little careful thought that further comment in this direction is unnecessary.

Another side of the subject, not often enough dwelt upon, but of no little significance for the future, ought to be pointed out here. I refer to the advantages derivable from a study of micro-chemical reactions. The study of microscopic histology is likely, it seems to me, to resolve itself more and more into this. Even if the protoplasm of a cell consists only of chemical substances of a greater or less degree of complexity, and the prevalent ideas of its organization be baseless—I do not say that they are—one of the best means of studying it will be by combining microscopic observation with the methods of analytical chemistry. Who would assert that the precipitates producible by various chemical substances in solutions of albumin, of copper sulphate, or of silver nitrate are of no interest to the chemist as regards the nature of these solutions? Is it any more true that the precipitates and coagula formed by means of others can be of no help to us in investigations on the nature of cells? I think not, nor do I see how any one familiar with the beautiful experiments of Fischer on the micro-chemical fixation-analysis for albumoses and nucleinic acid or the important deductions made by R. R. Bensley concerning the glands of the stomach, or the researches of A. B. Macallum upon the distribution of iron and phosphorus in animal and vegetable cells, to choose only three of many striking examples, can entertain the idea for a moment.

A large portion of the confusion which has arisen in the minds of investigators is due to differences in conception with regard to the meaning of organization. Everyone is clear as to the application of the word to the structure of complicated higher organisms but ideas become hazy when the structure of unicellular organisms is thought of. There are many who think that we have an infinite series of gradations of complexity of organization and that the view expressed by Nägeli in 1884 that everything in the world, even what hitherto we have designated as "inorganic," possesses organization in a higher or lower degree, has much in its favor. When men like Darwin, Spencer, Weismann, de Vries, Pfeiffer, O. Hertwig and Roux have supported views which are based upon the idea that the secret of the ultimate constitution of living organisms must be sought in some hidden organization, that function is explicable only by the assumption of the harmonious co-operation of certain ultimate units in the cell and that these units work together like the parts of a machine, one naturally hesitates to summarily reject these hypotheses.

On the other hand, there is much that appeals to the speculative mind in the other view in which instead of hypothecating a machine-like organization of the ultimate constituents of organisms, a chemical organization of these constituents is assumed. The truth may here, as it does in so many cases, lie in a compromise between the two views. It may very well be that, since in large part at least the capacities of an organism depend in the ultimate analysis upon chemical energy, the energy which runs the machine is not simply brought to it, but is actually produced within the machine itself. At the same time, as Bütschli points out, there would seem to be no reason why a great significance should not be ascribed to the formal structure-relations in explaining the peculiar phenomena which organisms present. In so doing, as he says, it is not necessary to assume that these structural relations form an unbridgeable chasm between the "organized" and the "unorganized"; on the contrary, structures agreeing in principle with them are probably to be found in the inorganic world, those occurring in organisms being only farther developed and more complicated on the one hand and on the other endowed with especial capacities owing to the special chemical nature of the substances constituting them; one is reminded at once of the peculiar properties of certain purely physical structures, and of other chemico-physical structures (micro-crystalline structure, imbibition phenomena, properties of sphäro-crystals, mobility of oil-soap foams, etc.).[1]

Whatever may finally be decided upon, certain it is that noteworthy progress is being made just now in the study of the cell through investigations in which the attempt is made to apply the laws of physics and chemistry to the phenomena of cell-life. Indeed, the harvest reaped by Ludwig and his pupils in the field of organ-activities and apparatus-mechanisms promises to be succeeded by a still more profitable yield in the domain of the cell-activities underlying them. Time will not permit me to do more than to refer to two or three of the more striking series of achievements. The studies of fermentation, of certain organic and inorganic intoxications, of antitoxin formation and the production of immunity, will serve as examples.

1. Bütschli O. Mechanismus und Vitalismus, 1901.

Out of the vagueness of earlier conceptions there have been gradually evolved more precise ideas of ferments and of the process of fermentation. To quote Carl Oppenheimer, "a ferment is the material substratum of a peculiar form of energy which is produced by living cells and is more or less firmly attached to them, though the part it plays in the vital process is not so bound; this energy is capable of liberating latent (potential) energy of chemical substances and of transforming it into kinetic energy; the effect is such that when the chemical substance is altered, the substance newly formed or the sum of newly formed substances possesses a smaller potential energy, i. e., a smaller heat of combustion than the original substance. The ferment itself remains unaltered during the process. It acts specifically, i. e., each ferment is active only upon substances of wholly definite structural and stereo-chemical arrangement." Or to quote J. Reynolds Green, by fermentation is meant "the decomposition of complex organic material into substances of simpler composition by the agency either of protoplasm itself or of a secretion prepared by it." These are the definitions given in two of the most recent books dealing with the subject, one published in 1899 and the other in 1900. So rapidly is the subject moving that, as will be pointed out farther on, it seems quite probable that each of these definitions may have to be modified. One of the greatest achievments in connection with fermentation since Pasteur's time is undoubtedly the proof brought by E. Buchner that the fermentative activity of the yeast cell, so long inseparably connected with the life of the cell, is the property of an enzyme which he calls *zymase* and which can, when expressed from the cell, change glucose into alcohol just as well as the original yeast. Here at a blow fell down the partition between the so-called "organized ferments" and the "unorganized ferments" or enzymes. The fact appears to be that some ferments in nature act chiefly within the cells in which they are formed (zymase) while others are thrown off into the environment of the cell to carry on their work outside it (secreted enzymes, "unorganized ferments").

I have had occasion, during the last few months, to review some of the recent literature on ferments and have been astonished to find in how many instances and in what divers processes the proof of ferment participation appears to have been brought, and to learn how extensive and penetrating have been the researches dealing with their nature and mode of action. Aside from alcoholic fermentation and the prodigious labor of Hansen and others on the different species of yeasts and their bearing upon the industrial methods of brewing and the manufacture of wine, one is much impressed on approaching the subject seriously for the first time, by the progress made in connection with the saccharifying ferments, the ferments which split up glucosids and the various proteolytic and coagulum-producing enzymes. The oxidizing ferments or oxidases which seem to play so large a part in the processes of vegetable life, are in all probability of just as great significance in the life of animal cells.

Most fascinating in connection with the ferments are the experiments and hypotheses of Emil Fischer, who, so well known in connection with his work on the stereochemistry of the sugars has during the past three or four years been devoting his attention also to a stereo-chemical consideration of the ferments. Pasteur had made the remarkable observation that fungi are capable of fermenting the dextrorotatory tartaric acid, not the levorotatory. It has also been known for a long time that in the fermentation of sugars by yeasts only those sugars ferment which contain 6 and 9 carbon atoms in their molecules (and of the latter only those belonging to the "d" series, and indeed not all of them). Sugars of identical chemical composition may or may not ferment according as the spatial relations of the atoms to one another in the molecule conform to one or another configuration. Fischer has undertaken to investigate the stereo-chemistry of the enzymes proceeding on the hypothesis that for a particular stereo-chemical configuration of a sugar there must be a corresponding particular stereo-chemical configuration of the enzyme which is capable of fermenting it—in other words that the relation of enzyme to its fermentable sugar is something of the nature of the relation of a key to the chambers of a lock. Fischer prepared artificially various derivatives of the sugars like glucosids or alcohol-sugar ethers. On submitting these to the action of ferments he found that the ferment of yeast and that known as *emulsin* acted only upon the glucosids which correspond to the sugars fermentable by them and not upon glucosids of the same chemical composition but of different stereo-chemical configuration. Further, from the fermentable sugars it is possible to prepare two stereoisomeric series of glucosids, so-called alpha-glucosids and beta-glucosids and of these Fischer discovered that the members of the alpha-series are fermentable by the enzymes of yeast only (maltases and invertases), while the members of the beta-series are split only by emulsin—an exquisite example of the specific effect of enzyme action. But, on the other hand, this specificity is not dependent upon the molecule as a whole, as is shown by the fact that the influence of an enzyme is not confined exclusively to a single chemical substance. Diastase is capable of splitting all starches and a part of the dextrins. Emulsin can split up numerous natural glucosids of varying composition (amygdalin, salicin, arbutin, etc.) as well as the beta-series of artificial glucosids prepared from fermentable sugars. The proteolytic-enzymes (pepsin and trypsin) can split up the great group of albuminous substances though, as is well known, different members of the group must be very differently constituted chemically. The specificity of the action of the ferment obviously must concern therefore a certain spatially arranged group of atoms in the molecule; no matter then, what the size or total composition of the molecule, its splitting by a given ferment is conditioned by its possession of the steric atomic group corresponding to it. The fact that certain substances are split by different ferments in different ways supports rather than detracts from the validity of the theory. Amygdalin, the glucosid present in bitter almonds, is split up by both emulsin and the yeast enzymes (maltases and invertases) but in an entirely different way. The yeast enzymes split off only one molecule of glucose and leave behind the remainder of the glucosid in the form of a peculiar body known as mandelnitrilglucosid. Emulsin on the other hand splits up amygdalin into benzaldehyd, hydrochloric acid and glucose. While mandelnitrilglucosid is insusceptible to further action by yeast ferments, it can be split up by emulsin further into benzaldehyd, HCl and glucose. Thus while the yeast-ferments can unlock, as it were, only the outer door of the molecule, entrance to the inner compartment can be gained, apparently, only with the aid of the emulsin pass-key.

With such wonderful phenomena before us, it is but little wonder that speculation is rife with regard to the

*nature* of what we call ferments and enzymes, for any distinction between the two may theoretically, at any rate, from now on be dispensed with. It does not seem profitable to go into a full discussion of the topic on this occasion. The difficulties in coming to a decision are very great. For the view that the ferments represent actual chemical substances a very great deal can be said; the specific effects of enzymes speak in favor of a specific material substratum. On the other hand the theory of Arthus that enzymes represent simply non-material centers of energy has some adherents. Attempts at preparation of enzymes as pure chemical substances have thus far been fruitless; and if they are chemical substances, they are quite different from anything we know as yet in the inorganic world, if certain substances acting "katalytically" and the so-called inorganic ferments (spongy platinum) be excluded.

Some very recent work strengthens markedly the position of those who espouse the chemical theory. I refer to the experiments of Croft Hill and of Kastle and Loewenhardt on the reversibility of ferment action. In 1898 Hill asserted to the astonishment of the scientific world that maltase, which ordinarily splits a molecule of maltose into two molecules of glucose, can, under certain circumstances (concentration of the solution), turn about and act in the opposite direction, a certain amount of glucose combining to reform maltose. In some quarters Hill's findings have been received with great skepticism, Oppenheimer especially tending to discredit Hill's interpretation of the phenomena he met with, and asserting that even if it were confirmed it would put maltase in a wholly exceptional position, separate from other enzymes. A large part of Oppenheimer's objections to Hill's work would seem to be his assumption that such a reversibility is impossible; it is out of accord with his definition of a ferment *(vide supra)* and his objection is in a sense a *petitio principii.* Though Green's definition is also incompatible with Hill's work, possibly having been formulated before he was familiar with it, the English author accepts Hill's results enthusiastically, looks upon them as bringing ferment action into accord with the general theory of chemical equilibrium or mass action, and as increasing the credibility of the chemical hypothesis. To the delight of many, Hill's observations and conceptions have received striking confirmation in the work of two American investigators—Kastle and Loewenhardt, of Lexington, Kentucky. With an entirely different enzyme, viz., lipase, the fat-splitting enzyme, they appear to have been able to demonstrate a very definite reversibility of action, and a flood of new light is thrown at once upon the problem of fat absorption and fat translocation. Further experimentation along these lines with the same and other enzymes will be eagerly awaited.[2]

Let us now turn to the consideration of another series of problems which concern the cells of the body, namely those dealing with the effects of certain poisons upon the constitution of the cells and with the cellular activities which lead to the production of antitoxins (Behring, Ehrlich) and various anti-bodies, among others the bacteriolysins (Pfeiffer), the anti-complements (Ehrlich), the hemolysins (Ehrlich), and other cytolysins (Bordet). This subject is a very large one and I realize that in the time available I can do no more than sketch very briefly and in coarsest lines its most salient features. The work which has been done is, however, so brilliant, and fits in so neatly with the investigations on the enzymes, and, moreover, its results carry with them so much hope for the future of pathology and therapy that I can not deny myself the pleasure of referring to it here.

Just as Emil Fischer, as the basis of his views on the nature of ferments, has made the stereochemical configuration of certain atomic groupings in the molecule of the greatest significance, so Ehrlich, in his studies of toxins and antitoxins has applied similar stereochemical conceptions. He believes that the specific affinity of a toxin for an antitoxin can be most simply explained by the assumption of two atomic groups which correspond to one another in configuration. As a result of a large number of experiments he has concluded that the toxin molecule (*e. g.,* diphtheria toxin or tetanotoxin) possesses at least two combining groups. Diphtheria toxin and tetanotoxin are toxic products of secretion, but closely related to them are certain vegetable poisons like ricin and abrin, and certain poisons of animal origin like snake venom and the hematoxins present in the sera of normal animals (*e. g.,* ichthyotoxikon of eel serum). Toxic bodies of this class differ from poisons like the alkaloids and toxic glucosids in that they are capable of producing antitoxins. Even morphin, to which great tolerance, as everybody knows, can be developed, does not, it is said, give rise to the production of anti-bodies, but leads to increased oxidation capacity of the cells, by which the excess of morphin is destroyed. Ehrlich believes, therefore, that alkaloids, antipyretics, aromatic amines and anilin dyes when introduced into the body form only very loose combinations with certain of the cells of the tissues instead of being anchored there by a firm synthesis, and it would appear from his and other investigations, that in the brain especially it is lecithin and similar fat-like bodies which account for the accumulation there of alkaloids and similar substances. Toxins, on the contrary, Ehrlich thinks, form a much more permanent and firm combination with the protoplasm, entering actually into its constitution by a process of assimilation quite like that underlying the nutrition of the cell by food substances. To explain the assimilative processes in cells and to account for the firm chemical syntheses by which they are accomplished, Ehrlich has suggested that "protoplasm is equipped with certain atomic groups, whose function especially consists in fixing to themselves certain foodstuffs of importance to the cell life." These atomic groups he speaks of as "side chains" or "receptors," and he assumes that the foodstuffs for which these side chains have a maximal chemical affinity must contain atomic groupings of similar stereochemical configuration.* It is only a step farther to his conception of the mode of action of toxins. One of the two combining groups of the toxin molecule corresponds to foodstuffs in being able to unite with the receptors of definite cells; this is designated, therefore, a *haptophore* group, and the receptors may be considered as a toxophile group. The other group of the toxin molecule, called the *toxophore* group, is the one which injures the protoplasm, although it can affect the latter only through the haptophore group. From the researches of Konitz and Heymans, it appears that the

2. Nef's conception of the mode of action of enzymes is most interesting. Basing his view upon a long series of experiments in the so-called "methylene chemistry," he assumes that catalytic agents, among them enzymes, act by depressing the temperature of a dissociation process by which compounds containing tetravalent carbon are split up into two or more substances, one of which contains carbon in a bivalent condition and is therefore very unstable, uniting with oxygen, water or other available substance to form a new compound. It is his opinion that a large proportion of both analytical and synthetical reactions will ultimately be explained in this way.

* I am indebted to Dr. Preston Kyes for much information with regard to Ehrlich's views.

haptophore group becomes *immediately* active when the toxin is injected into the organism, the poison combining at once with the cells which have corresponding receptors. The toxophore group, however, is often very slowly active, a longer or shorter incubation period elapsing after injection before the specific toxic effects become evident. The toxophore group would seem to be far less stable than the haptophore group; it can be destroyed without injury to the haptophore group, in which case a toxin is converted into a toxoid. Moreover, as Morgenroth has shown, the activity of the toxophore group of the tetanus toxin is inhibited by low temperature, while the haptophore group is not, a view quite in accord with Courmont's observations that frogs kept at a temperature of 20° C. show no signs of tetanus, even after large quantities of toxin are injected, though they quickly succumb in a warmer environment. Tetanus toxin in the mouse appears to combine only with nerve cells. This may be explained by assuming that receptors of the proper sort are present only in the nervous system of this animal; in other words, the localization of toxins in organisms is probably to be explained upon the possession by the variously differentiated tissues of specific combining powers. The number and distribution of specific receptors may be called upon to account in part, at least, for the variations in lethal dosage and for the distribution of the lesions in the tissues in different infections and intoxications.

Ehrlich's explanation of the origin of antitoxins is easily grasped if the theory thus far has been followed. When receptors which ordinarily unite with a foodstuff combine with the haptophore group of a toxin, there results a defect in cell life, since the receptors are thrown out of their normal function. If Weigert's theory of regeneration is correct, the cells will not only build new receptors to repair the defect, but the regeneration will go far beyond the necessary limit—"over-compensation" being the rule. By suitable dosage of toxin, the amount being gradually increased, the over-compensation finally reaches a stage in which the excess of receptors or side chains is so great that they are, like useless ballast, thrown off into the blood. According to Ehrlich's theory, the antitoxins are nothing more or less than such free side chains. Each supplied with a group combining with a haptophore group of a toxin is capable of fixing and thus neutralizing one molecule of toxin.

In the production of immunity, it is the haptophore group of the toxin molecule which is essential; the toxophore group is of no significance. If this be true, toxoids or toxins deprived of their toxophore group may be of the greatest importance in future therapy. We have held out to us the prospect of the establishment of an active immunity through the injection of substances which are entirely innocuous.

Some of the difficulties met with by the investigator in connection with toxins and antitoxins are disappearing now that we are being better informed with regard to the life of the bacterial cell. The great complexity of the products of cell activity is gradually becoming apparent and we no longer think of the tetanus bacillus or of the diphtheria bacillus as producing a single poison. On the contrary, it seems very probable that a given pathogenic bacterium may produce several or even a whole series of poisons. Thus the tetanus bacillus has been shown to produce not only the poison which is now called *tetanospasmin*, and which causes the typical convulsive attacks, but also a substance which breaks up red corpuscles and is known as *tetanolysin*. That the haptophore group in tetanospasmin is different from the haptophore group in tetanolysin is shown by the fact that the receptors of the red blood corpuscles can combine with tetanolysin but not with tetanospasmin. In the production of immunity against tetanus, therefore, it is safe to assume that at least two varieties of antibodies are developed and that each of these has an independent origin in different parts of the body. Besides the production by the same bacillus of different poisons having different haptophore groups there is evidence that some bacilli can produce poisons which possess identical haptophore groups but different toxophore groups. Thus the diphtheria bacillus besides giving rise to the ordinary toxin which is the main poison it produces, also manufactures a second poison called the diphtheria *toxone*. Toxin and toxone are believed to possess similar or identical haptophore groups since both poisons are completely neutralized by antitoxin. The toxin, however, has a lower degree of affinity for antitoxin than has the main toxin, since when an amount of antitoxin insufficient to neutralize all poison present is added to a mixture of the two, the toxin is the first to become saturated, just as when we neutralize a mixture of HCl and $HC_2H_3O_2$, the HCl is neutralized first and the acetic acid only later. This makes it probable that the difference between the two poisons lies in the toxophore group, a view supported by the difference in biological effect between toxin and toxone; the former causes the extensive necroses characteristic of this disease, while the latter does not, though it is responsible for the slowly appearing alterations of the nervous system which account for the post-diphtheric paralyses.

As many of you are aware, the side chain theory of Ehrlich can be and has been applied to explain the mode of formation and action of the bacteriolysins of Pfeiffer, the hemolysins and cytolysins of Bordet, the "coagulins" of Kraus and Bordet, the "agglutinins" of Durham, Gruber and Pfeiffer, and the "antiferments" of von Dungern. It is very interesting, indeed, to have learned that the two components of hemolysin, for example, the "immune body" and the "complement," combine with one another to form the active substance, which appears to be quite analagous to a simple toxin, differing from it only in this, that it is composed of two separate parts, one of which (the immune body) carries the haptophore, the other (the complement) the toxophore group. I need not dwell upon the special features of these bodies, for I am told that Dr. Clowes has already presented the subject to this society, and, moreover, the articles of Ehrlich and others are easily available to those who wish to follow the subject further.

Had I the time—I know I have not—I should like, in contrast to the work done with very complex organic bodies, such as the ferments, foods, bacterial toxins and antibodies, to review the remarkable results which are being obtained with the relatively simpler methods of physical chemistry—results which are cutting large windows in walls hitherto impenetrable between us and animal and vegetable cells. The application to biology of the laws to which the phenomena of osmotic pressure, of chemical equilibrium and of substances in various conditions of aggregation conform, is being crowned with unusual success. One has only to read Ernst Cohen's recent monograph to be convinced that there is a very important future for the principles introduced by van't Hoff and Arrhenius in connection with medical problems. Already some very striking observations have been made and experimentation in this field is most active. It is matter for congratulation that much of the successful work of this kind is

being conducted by American investigators. Loeb, Morgan, Kahlenberg and True, and others are important contributors. Loeb's researches especially on artificial parthenogenesis, and upon the effects of ions of various sorts upon muscular and neural activity, may be mentioned as significant examples of the value of the conceptions of osmotic pressure and electrolytic dissociation in revealing the secrets of cell life. The most recent publications of the same investigator indicate that the domain of toxicology, with its poisons and anti-poisons, and even the "intermediate" bodies may be successfully invaded by the physical chemist.

From the various observations touched upon in what has preceded, three points seem especially worthy of emphasis:

1. The extraordinary variety and complexity of the chemical substances given off by the cells to the lymph and blood.

2. The chemical specialization of the various tissues of the body; and,

3. The value of chemical and physical conceptions as working hypotheses in the interpretation of life phenomena.

When we regard the blood serum in the light of these newer studies; when we think of the host of substances derived from the food on their way to hydrolysis or oxidation on the one hand, or to a larger synthesis on the other; when we recall the enormous number of receptors, immune bodies and intermediate bodies, complements and anti-complements, ferments and anti-ferments, coagulins, etc., which the blood of every higher animal must contain; when we think of the constancy of osmotic pressure retained despite the presence of a variety of dissociable salts in solution, we are led to exclaim with greater meaning than even Mephistopheles could have attached to the words: "Verily 'Blut ist ein ganz besonderer Saft!'"

The conception of a chemical differentiation of the tissues more divergent even than that which characterizes their morphology promises to be most heuristic.[3] Even though Ehrlich's hypothesis should later prove to be insufficient, and considering the present crude state of our chemical knowledge of the body, there can be but little doubt that it must be replaced or at least supplemented later by still more far-reaching speculations; it is at the present time stimulating a whole series of investigators to fruitful original research, and no more can be asked of any hypothesis. As long as it continues to lead to discoveries of importance, we may cling to it and utilize it. Only when it ceases to exercise a heuristic influence need we cast it aside for another more potent. Certain it is that aside from the chemical and physical peculiarities common to protoplasm in general, there are a host of special activities localized in the cells of different regions of the organism, the necessary consequence of ontogenetic development and a long phylogenetic history.

One can not help but be impressed with the fact that the important discoveries are being made by men who, no matter what their ultimate beliefs, in their work avoid animistic hypotheses and animistic phraseology, and with René Descartes, choose the guiding hypothesis that vital phenomena are resolvable on analysis into the same elements as those underlying all other phenomena of the physical world. The mysteries of matter, energy and ether may never be fully explained to us, or they may ultimately be satisfactorily interpreted in terms of some grand monistic hypothesis. For the present this matters but little to us. It is enough that mechanistic conceptions are leading to discoveries of the greatest value for the alleviation of the sufferings and increasing the joys of mankind.

We have good reason to be proud of the progress already made in the unveiling of both the general and special processes which go on in the cell. Let us hope that in the near future, the investigators already at work, together with new men and new methods, may tear away more of the coverings which prevent our clearer insight; it is not, I believe, too much to hope that the present generation will be permitted to view with considerable distinctness many of the subtle processes which go on in the cell but which as yet we only dimly and vaguely begin to perceive.

3. Bichat, the founder of the science of histology, differentiated the tissues from one another chiefly by means of chemical reagents. He used the microscope only to a slight extent, and found it of but little use in his researches. Since his time, histologists supplied with a perfected instrument, have enthusiastically prosecuted microscopic research, very often, it is to be feared, to the neglect of chemical histological methods. Both morphological and chemical methods are of value to the histologist; they are reciprocally helpful. If morphologists would pay more regard to the methods of the chemists and chemists would take the trouble to more carefully enter into the thought of the morphologists, we should have better balanced views of histology and cytology than some of those which confront us in current text-books and periodicals.

## Clinical Report.

### GASTRO-JEJUNOSTOMY FOR STENOSIS OF PYLORUS—POSTMORTEM SIX YEARS LATER.

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KANSAS CITY, MO.

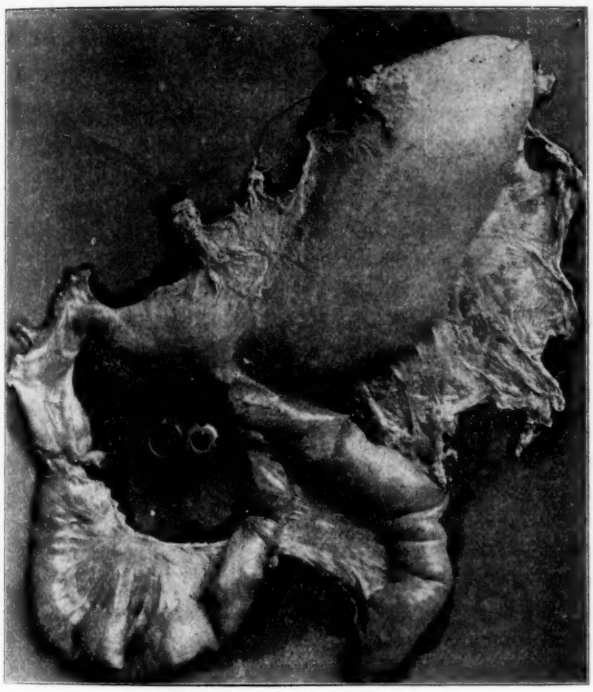
Mr. C., aged 38, eighteen years ago began having digestive trouble. It was noticed at that time that solid particles of food in the stomach gave rise to more or less pain. A year or so later, vomiting began as a symptom. This vomiting was usually produced by the presence of food in the stomach. After the stomach was emptied the pain would cease, and the patient would be fairly comfortable until after another meal. On one or two occasions he had quite a perceptible show of fresh blood in the vomited material. This condition of painful digestion continued up to the time of my first examination. In addition to the above history I learned from the patient that large quantities of material would be thrown up that had been retained in the stomach for two or three days. As much as twelve or fourteen pounds of strongly acid, offensive material would be thrown up from the stomach at one time. This usually brought some relief, but even when the stomach was emptied of its solid contents gaseous distention would go on producing great distress from the pressure of the enormously dilated stomach. Cardiac and pulmonary dyspnea was a very prominent symptom as a result of this pressure against the diaphragm.

He had lost very much in weight at the time I saw him, and weighed only 115 pounds, was taking 20 grains of morphin a day, and was in a desperate condition in every sense of the word. My examination revealed an enormously dilated stomach and a very much emaciated patient. There was no tenderness on pressure at any spot over the abdomen; no enlargement or induration could be detected through the thinned abdominal walls. A diagnosis of pyloric obstruction resulting from the healing of a non-malignant ulcer was made. An operation having in view the establishing of a free communication between the stomach and the lower alimentary tract was advised and accepted.

It was noticed in the examination that the pylorus was very low and unusually far to the right of the median line. From this reason, at the time of the operation, the incision was made in the right semilunaris, believing that it would give the near-

est approach to the most dependent portion of the dilated organ. The correctness of this decision was verified at the operation. I found on opening the abdomen the stomach very much dilated, but in position as before described. Believing, as I do, that all of these operations should be primarily drainage procedures, the anastomosis was made nearer the pyloric end of the stomach than that usually advised or found necessary. The incision in the stomach was made in its anterior wall about four inches from the pylorus. A coil of the jejunum 15 or 18 inches below the pylorus was selected as the suitable site for the incision in this portion of the canal. The usual precautions were used in the application of the sutures in the use of the Murphy button.

The operation was quickly performed and the patient returned to bed in good condition. Following the operation there was no unpleasant symptom. In a few days he was able to take the necessary nourishment without any inconvenience or pain following its ingestion. The morphin was withdrawn from him, and at the end of three weeks he was not only broken of his morphin habit, but was able to return to his home, taking both liquid and solid nourishment with perfect comfort. He continued to improve until his former good



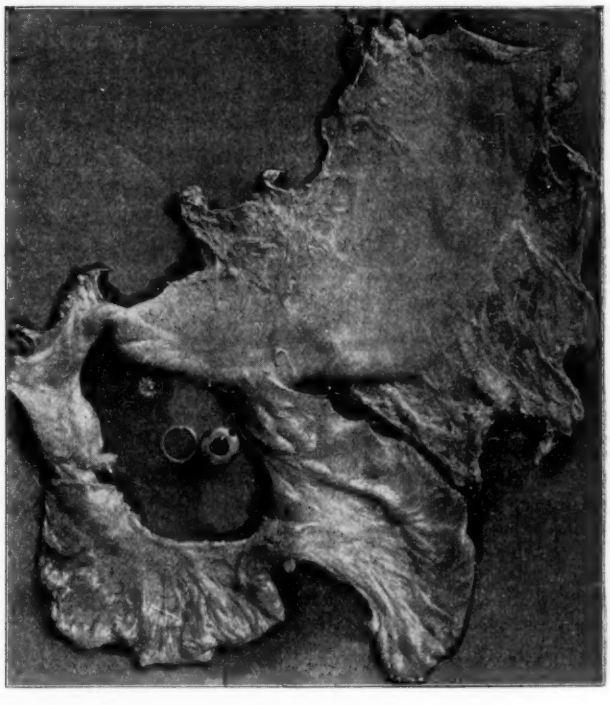
Gastrojejunostomy (Murphy button). Patient died of pneumonia seven years later. Stomach is filled with air in this picture. Notice difference in size of distal and proximal ends of bowel; very little air in duodenal end.

health and weight were regained. He increased in weight until he weighed 180 pounds, and was strong and able to do any work that was necessary for him to do. His digestion was perfect and free from pain; the gaseous distention disappeared and the stomach seemingly regained its natural size and tonicity. He continued in this state of health for six and one-half years. He was then taken with acute pneumonia, and within two weeks died as a result of this attack.

I was fortunate in being able to make a postmortem in this case. On examining the stomach I found that there was a complete obstruction of the pylorus; that the stomach had regained its former size; that its muscles were well developed and in a healthy condition; that the portion of the duodenum and jejunum above the point of anastomosis, while in a healthy condition, showed well-marked evidence of atrophy from disuse. At the site of the anastomosis there was absolutely no omental or other adhesions except those made by the union of the bowel to the stomach. The opening from the stomach into the lower segment of the bowel was as large seemingly as at the time of the operation. There appeared to be a species of valvular action that prevented the contents of the stomach from going into the upper coil of the bowel. A similar arrangement seemed to exist preventing the bile from going into the stomach. On filling the stomach with air or water not one drop or bubble could be forced through the pylorus. The water would enter the lower segment of the bowel with perfect ease, and none at all would go into the upper segment until after the stomach and lower segment of the bowel were thoroughly distended.

As remarkable as it might seem, the Murphy button, instead of passing into the intestine and finding its way out into the external world, as is usual, had dropped into the stomach and remained there for nearly seven years, or until the time of his death. Its presence in the stomach had never given rise to a single symptom. One end of the button was very much destroyed, presumably by the secretions of the stomach.

The accompanying illustrations show very distinctly the strictured condition of the pylorus, also the perfect anastomosis between the bowel and the stomach. It also shows the distended condition of the stomach and the lower segment of the bowel with very little distention of that portion of the intestine above the site of the anastomosis.



Gastrojejunostomy (Murphy button) nearly seven years ago. Stomach removed from patient dead of pneumonia.

While the dropping back of the button into the stomach might be used by some as an argument against its use, this objection would certainly lose its force from the fact that not a symptom was produced by its presence, and also from the fact that the time of performing the operation is very much shortened, a no small item in many of these cases. The greatest of all in favor of the button is the fact that nearly every one of these cases recover from the operation if the work is properly done.

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"**Interviewitis**" is a word nearly as good and entirely as bad as many that have been recently coined, and it is surely on a par with the thing it is designed to name. Almost every week one sees reports of interviews in the daily papers, all properly earmarked, none ever disavowed, in which it is plain that the doctor has been only too eager to be quoted. The interview is usually upon a matter about which the physician named has little knowledge and no special qualification for instructing the lay public whatever. His opinions are therefore without weight, and are almost always absurdly trite or erroneous.—*Amer. Med.*

# The Organization of the Medical Profession.

*(Continued from page 515.)*

## VIII.

### MEMBERSHIP IN THE COUNTY TO CARRY WITH IT MEMBERSHIP IN THE STATE SOCIETY.

One of the most important resolutions regarding reorganization adopted by the American Medical Association last June was the following: "That membership in the county or district societies shall constitute membership in the respective state society without further dues, and that no one be admitted to membership in the state society except through county or regular district societies."

#### Essential to Representation.

Last week we called attention to the benefits to be derived by separating the business or legislative from the scientific functions of the state society, and suggested the necessity of recognizing that the county or district societies must create the business body. While it is not necessary to adopt the principle enunciated in the above resolution to carry into effect this idea, it is necessary that the bodies which create the business part of the state society be definitely recognized as branches of the state society.

When the American Medical Association changed its organic law, it took from the district, county and local societies the right of direct representation in its legislative body, limiting this right to the state and territorial societies. In doing so there was no thought of depriving the members of these subordinate bodies of the privilege of expressing their views, and of registering their desires, as regards matters of national importance, such as will be brought before the House of Delegates of the American Medical Association, but rather to create a way in which they could do this much better and more satisfactorily than under the old method. Instead of every subordinate society, large or small, in every part of the country, sending its representatives to the National body, thus making the latter unwieldy, it is proposed that such representatives shall first gather together as a state organization and then elect from among themselves one or more delegates to represent them in the House of Delegates of the American Medical Association. If the state society does not take in county or district societies, members of the latter who are not members of the state society will not be represented. The American Medical Association is therefore justified in asking each state society which has not heretofore done so, to arrange to give its subordinate bodies the right of indirect representation in the legislative body of the National Association, since the right of direct representation has been taken away in the interest of the greatest good to the largest number.

#### An Aid to Local Societies.

The comparative slight interest in state societies is partially due to the fact that they are separated from the local organizations. To the great majority of physicians a state society is a sort of superfluous body membership in which carries little distinction and no appreciable advantage, meeting once in a year and dormant the rest of the time. They have done nothing to make the mass of practitioners think otherwise since they have no fraternal feeling or direct affiliation with them. The annual meeting of the average state society, the country doctor is apt to say, owes its general interest, aside from a very moderate social element, to the addresses and communications of those from the medical centers who thus utilize it for their coming in contact with their clientele of rural consultants. While this feeling is not founded on good reason, direct affiliation with local societies will remove the sentiment. A state society should be a state society in fact as well as in name, not an oligarchy above and beyond the great body of practitioners. Its aim should be to build up strong local societies, and through them reach the members of the profession. One of the most important results to be gained from the plan suggested will be the building up of such live county societies. As has been mentioned many times, but it will bear repetition—the great, the all-important object now before us is the encouraging of county, or in thinly settled territory, district societies, so that every member of our profession may have the opportunity of society fellowship. The best way to build up these bodies is to make it impossible to obtain membership in the state or national associations, except through membership in one's own county society.

#### The Scientific Branch of the State Society Should Be Open to All.

The object of the scientific branch of the state society is the diffusion of medical knowledge. The primary object of its annual gathering is educational; the second is social and fraternal. There is no reason why every reputable physician should not be welcome to such a meeting, especially if he is considered by his fellow practitioners, who know him best, to be a desirable member of their society. There can be none unless the members of the state society desire that body to be select and exclusive, an idea which is as far from their wishes as it would be repugnant were it a fact. To make high professional attainments a qualification for membership in certain exclusive societies devoted to special work may be right, but it certainly would not be right in a body which claims to be democratic and representative, as all state societies are supposed to be. They all gladly welcome to membership every reputable physician, so that there can be no objection to absorbing all members of recognized county societies on this score. As far as excluding from the state societies those who are not reputable and ethical, it would seem that limiting membership to those who belong to county societies is more likely to prevent admission of such men than the present method of governing entrance. If, however, the subordinate societies are made, *de facto,* branches of the state society, then the latter can control admission of members to its branches by any rules it may deem best to lay down.

#### Would Result in Increase in Membership of the State Societies.

Membership in the state society would be greatly increased by adopting the county society plan. As an illustration, the membership of the Illinois State Society is 1170, according to the *Illinois Medical Journal,* and the membership of the subordinate societies is 3700. How many of the latter belong to the former we do not

know; but probably it would be under- rather than over-estimating, to say that 300 belong to the state society who do not belong to any subordinate body. Combining the county societies with the State would then give the Illinois State Medical Society 4000 members at once without any effort whatever. The combining of the subordinate bodies with the state society in Ohio would give about the same number. In many other states likewise large increase of membership in the state society will result when the plan recommended is adopted by them.

**Advantages from Increased Membership in State Societies.**

The advantages to be derived from this large membership in the state society are so many and so obvious that it will be unnecessary to more than hint at two or three. The most important of these will be an increased total revenue, at a small cost to the individual. The lack of money in the past has prevented the undertaking of many important measures. Little can be accomplished in this world without money and yet this fact does not seem to have been appreciated by the members of our medical societies. To illustrate this point of increased revenue, we again refer to the two states mentioned. The present membership of the Illinois State Medical Society should result in an income of $3510, providing all pay their dues. Under the new order, the same annual assessment, $3, would give an income of $12,000, much more than would be necessary after the first year or two. Thus the annual dues could be reduced. The present membership—960—and annual dues—$2—of the Ohio State Medical Society should net that body $1920. If it adopts the broader scope and plan, the annual income on the same individual dues would be $8000.

**Decreased Proportionate Expense.**

The larger the membership, the smaller is the proportionate expense. The financial outlay of the state society, of course, varies with the work done. It will not be an unfair statement to make that at least three-fourths of them have been doing nothing in the past except to hold an annual meeting, principally devoted to scientific work, and hence the only expense has been that which was connected with these annual meetings, that is, the secretary's salary, the printing and issuing of programs and transactions. The former varies from nothing up to two or three hundred dollars. The increase in membership would increase the work of the secretary, but not proportionately. The printing and sending out of the programs is a small item to be sure, but this would be increased but slightly with the increased membership. The publication of the annual transactions is always the greatest item of expense. It is well known that the greatest expense of producing a book is that which pertains to the first copy. The typesetting, putting the matter in the forms, the "make-ready" and getting the presses started constitute the greatest outlay. When the presses are running, the additional thousand or ten thousand copies adds very little to the cost of the press work. The plain white paper is a small item for each book, and the larger the number of copies the less the proportionate cost of binding.

If the annual volume of transactions could be substituted by a monthly journal—a most excellent thing to do for many reasons[1]—the reduction in cost to each individual by an enlarged circulation would be very great. Referring again to Illinois, the *Illinois Medical Journal,* owned and published by the State Society, would almost quadruple its circulation. The cost of getting out 4000 copies of that journal would be little more than that of 1000 copies, the added expense being simply the added cost of the white paper, an infinitesimal item for extra press-work and mailing. The good resulting through reaching the increased number at but a slight increase in expense, both as this applies to the annual transactions in book form and in a monthly journal, would be very great, without mentioning the very important fact that as regards the journal proposition as an advertising medium it would be a producer rather than a user of funds.

It will be urged that we are taking it for granted that all who now belong to subordinate societies will willingly stay in these bodies and thus become members of the state societies and assume the financial responsibilities that such membership carries. We certainly are taking this for granted, because we recognize as a fact that physicians are endowed with business sense, in spite of the statement so often made to the contrary. All will willingly give one, two, three or even five dollars annually for the privilege of being a member of the regular organization, provided they get value received for their investment. As business methods are expected to be adopted in the management of the regular organization when this is once effected, and as decided benefits of a practical nature will result from membership, there will be no hesitancy on the part of members of regular societies in paying the small annual assessments that will be required. Of course, if no greater advantage follows membership in the state society in the future than has followed it in the past there will probably be a large proportion who will object to this enforced membership. For, what has it been in the past? The average attendance at the majority of our state society meetings is less than one-third of the total membership. What advantage accrues to the two-thirds who do not attend—whether they can not or will not, does not matter—the annual meeting? What do they get for the $2 to $5 they pay each year? 1. A copy of the annual transactions which contain papers that, if they are of value, are published in the medical journals, a book that is usually thrown on one side and soon covered with dust, for the reason that it is of little interest except to those whose papers or discussions appear in its pages. 2. A satisfaction that one is helping in a good cause, and 3, the honor of being a member. The two latter reasons can not be considered from a business point of view. To secure membership in a medical organization, value received should be given for the annual dues. Physicians are business men, in some things at least. It is not necessary at this time to refer to what shall constitute value received; we are taking it for granted that, when thoroughly reorganized we shall enter on a new era in medical society management in which business methods will be adopted.

*(To be continued.)*

1. The journal would increase the membership of the local societies, and their additional income in time could be made to meet the expenses of the state body, that is if common business sense is employed. The average physician is far more ready to join a society if his membership includes the subscription to a live medical journal giving especial attention to the local medical interests of his commonwealth.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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## HELMHOLTZ AND THE PUBLIC LECTURE PLATFORM.

Of the many phases that the life of Helmholtz presents to the student of his life and times, by no means the least important is the scientist as an exponent, in popular fashion, of the more difficult subjects of his investigations. These run all along the line of physics and physiology and include such subjects as painting, musical tones, as well as others more closely related to medicine. Too little stress is generally laid upon the great teacher's ability as a public speaker. His addresses and popular lectures form no mean part of the legacy that has come down to us from him—commending themselves as examples of what such expositions should be—dignified, interesting, instructive and inspiring. An untiring and successful teacher himself, he possessed well-defined ideas of the requirements of professional fitness and these he set forth in his Rectorial Address at Berlin University. A few of the axioms he laid down on that occasion are: "He who wishes to inspire his audience with a complete conviction of the truth of what he advances, ought, above all, to know from personal experience what produces conviction. It is necessary, then, that he should have known how to advance alone into a region where no one has ever broken ground; in other words, he must have worked upon the frontiers of human science and conquered for himself new domains. A master who presents only results acquired by others, suffices for scholars to whom authority is given as the source of their science, but not for those who desire to deepen their convictions to their final foundations." Of the judgment formed by students of their teachers he further remarks that the general current of opinion can not long be at fault. The majority among them come to us "with a reason sufficiently formed by logic, with a sufficient habit of intellectual effort, with a judgment so considerably developed by a knowledge of the best models, as to be able to discern the truth from the phraseology which has only the appearance of truth." The fitness for a teaching career, according to Helmholtz, is most surely marked by doing something for the progress of science, and in this connection he makes a claim that will surely be allowed by every one who has been a teacher or student, that a good lecture or demonstration demands from the listener much less sustained effort than a bad one; it enables the subject to be comprehended much more surely and much more completely, and with a well-ordered arrangement, bringing into strong relief the principal points and the divisions, so that much more can be overtaken in the same space of time.

The main reason why Helmholtz gave the time and labor needed for the preparation of his popular lectures is he believed that the great body of scientific teachers and investigators owe something to the public and that the interests of the whole community are best served by properly directed extra collegiate teaching. It is not so much the *little* knowledge that is the dangerous thing as the *quality* of that knowledge. The laity will have, and always do manage to possess, medical information of a kind—if not the right kind so much the worse for scientific medicine. Movements to present popular courses of medical lectures have usually failed, chiefly because the initiative was not taken in the proper quarter.

Why should not the local medical societies, general and special, appoint a joint committee for the purpose of choosing from among their members lecturers of acknowledged ability to meet the demand for popular expositions of the truths of physiology and pathology and not leave these to furnish doubtful "copy" for the Sunday newspaper or the illustrated columns of the advertising charlatan? In the past, very successful and most interesting lectures on medical subjects have been given in the old Manchester "Science Series," as a part of the New York "State Science Lectures," in Chicago under the direction of a committee appointed by a daily newspaper, etc. Why should the medical profession delegate this function to irresponsible, even if perfectly sincere, laymen? It would seem as if we had pursued a dog-in-the-manger policy long enough. Surely the belief or suspicion that public lectures on medical topics are sometimes put to an unworthy use is no excuse for our neglect to provide them with proper safeguards against such a contingency. If the master who speaks of medicine as the "intellectual home in which he grew up" did not consider it improper or without his province to lay before a popular audience the fruits of his own and other scientific labors we can not be far astray in following his example.

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## TYPHOID BACILLI IN THE BLOOD OF TYPHOID PATIENTS.

The examination of the blood of typhoid patients for the presence of typhoid bacilli at first gave exceedingly variable results, and there was a time when but little earnest work was done in this field. Of recent years, however, the systematic examination of the blood by cultural methods has been taken up anew by many investigators, and their results seem to have established definitely that the typhoid bacillus frequently exists in the blood in typhoid fever; indeed, it seems probable that it is present at some time in every case. The occurrence of typhoid bacilli in the rose-spots, in urine and in the various post-typhoid suppurative foci can be explained only upon the grounds that bacilli are carried

by the blood. Furthermore, the existence of clinical typhoid fever, without the existence of typhoid intestinal and other lesions, and due apparently to a pure typhoid septicemia, shows that typhoid bacilli may thrive well enough in the blood during life.

In this country bacteriologic examination of the blood in typhoid fever has been carried out more or less systematically by Cole in the Johns Hopkins Hospital[1] and by others. Cole obtained cultures of typhoid bacilli in eleven of fifteen cases, and in the last seven cases, in which the blood was diluted with from 75 to 150 parts of bouillon, bacilli developed in every experiment. The earliest period at which he obtained bacilli from the blood was on the sixth day; in several cases the bacillus was demonstrated in pure culture before the serum gave the agglutinating reaction. These observations are confirmed in every way by Courmont[2] of Lyons, who was led to seek the bacillus systematically in the blood of his typhoid patients in order to determine the value of the procedure in the prompt and early diagnosis of the disease. He obtained the blood by puncture of a vein at the elbow, and inoculated immediately into broth, using a small but varying quantity of blood and a large quantity of broth (3 c.c. of blood to 500 c.c. of broth being the usual dilution). If the flask appeared clear the following day, it was agitated thoroughly. He examined in this manner nine cases, in all of which he found typical bacilli in pure culture in the blood without a single failure before the twenty-third day. Hence he considers it probable that the bacillus occurs in the blood of all typhoid patients. He found it present as early as the fifth day, and while it seems generally to disappear towards the end of the third week it may occur in the blood at a much later period in prolonged cases and those with relapse. As far as Courmont's observations go, the bacillus presents the usual characteristics when it is isolated from the blood; usually it is of high virulence. At first the bacilli seemed less agglutinable than the laboratory stock cultures, but with time the agglutinability increased materially. In four cases typhoid bacilli were present in the blood at a period when the serum of the patient had absolutely no agglutinating powers, and for this reason Courmont advances the claim that the bacteriologic examination of the blood in typhoid fever is of decided value in the early diagnosis of the disease, especially when the serum reaction is absent.

The essential point in the technic of this examination is the use of considerable quantities of blood, relatively speaking, diluted in large quantities of broth. This makes the method somewhat complicated, and there is required the apparatus and facilities of a well-equipped laboratory. Because the bacilli in the blood are few it is necessary to use comparatively large quantities of blood, and in order to overcome the bactericidal action of the blood it is necessary to dilute the blood at least a hundred times with broth. Further studies are necessary to work out many interesting details that suggest themselves as one reviews the work of Cole, Courmont and others.

1. Bulletin Johns Hopkins Hospital, 1901, July, xii, pp. 203-206.
2. Jour. de Phys. et Path. gén., Jan. 15, iv, pp. 154-170.

## ABSTRACTS, A VALUABLE FEATURE.

A short time ago one of our contemporaries indulged in an editorial expression of opinion that was decidedly unfavorable to the plan adopted by this journal and by several others, of giving a brief résumé of the leading articles in the current medical literature. It charged that the abstracts were incomplete, superficial, generally unscholarly and uncritical, and it mentioned without specifications a flagrant case in which the author's meaning was wholly misinterpreted. Undoubtedly such things occur, but they also are observed in critical résumés such as are found, say in our critical contemporary. Indeed, medical literature abounds in recriminations caused by such mistakes, which are sometimes unavoidable. Abstracts should not be critical; it is the policy of THE JOURNAL to avoid this, as it is deemed better to give so far as is possible a perfectly unbiased statement of the author's ideas. It is a harsh accusation, however, to say that those appearing in four of the eight medical weeklies of the country are "generally unscholarly" and one that ought not to be made by anyone so open to the criticism of ignorance of foreign medical literature as apparently is the writer of the editorial in question. One ought to be quite invulnerable himself to make such a sweeping charge against the scholarship of others.

The prophecy that the "abstract idea" is doomed to ultimate failure is, we believe, as incorrect as the assertion that it was new in weekly journals. The *Philadelphia Medical Journal*, which our contemporary credits with its origination, politely corrects this error, admitting that it derived the idea from one of the great German weeklies,[1] and with this, also the inference that it was about to discontinue its usual method of abstracting. This plan has found favor abroad, not only in the German weekly referred to but in other special and general publications and its use is extending. The numerous appreciative letters received from prominent medical men in this country convince us that it is not unfavorably considered here.

Critical summaries of special medical subjects of importance are excellent things if judiciously made, but they are often open to the same objections as to their incompleteness made against the abstracts, and are open to the further objection that they are not always unbiased statements of the views of the writers but are colored and we could sometimes say even adulterated, by the reviewer's prepossessions. The one can not supply the place of the other, useful as it may be, and with what experience we have had in working up medical literature, we would as a rule prefer—lacking original authorities—to depend upon the average abstract rather

1. Münchener Med. Wochenschrift.

than on "reports of progress," "critical summaries," etc., excellent as they are in their own way. We might say more on the subject, but this is probably sufficient. We trust that our esteemed contemporary will in the future be less sweeping and more judicious in its criticisms. If it lacked the enterprise to install such a feature in its own columns, this fact gives it no right to disparage the work of others.

## LESSONS FROM TYPHOID EPIDEMICS.

It is perhaps unnecessary to call attention to the manner of origin of epidemics of typhoid fever; the subject may be regarded as somewhat trite. Yet the story of every epidemic, be it great or small, is worthy of attention, as it serves to fix more firmly in the mind of the physician and through him the mind of the laity the great importance of prophylaxis and of proper sanitary precautions. Two very instructive reports on small epidemics of typhoid fever have just been published. In last week's issue of THE JOURNAL,[1] Harriman describes how 65 cases developed in a school where the general environment, the sewers and sewage disposal and the water supply were found perfect. But about September 15 a new milkman began to supply some of the milk and on October 8 three cases of the fever developed and others continued to do so until eighteen days after this milk supply was discontinued. There had been a case of typhoid fever in the milkman's family a few months before. On investigation it was found that this particular milkman rinsed his cans with water from two wells, one of which, the shallower, contained a large amount of organic matter with a large number of germs, among them one regarded as the bacillus typhosus. The cans were not scalded. The milk from this particular supply was served chiefly to students sitting at certain tables. Most of the cases were among these students. Sixteen young men in training for football drank daily double portions; of these sixteen, thirteen contracted typhoid.

The other report is by Rachford.[2] At a summer resort in northern Michigan 35 cases appeared among those who took their meals at a certain dining-hall. The local physicians with some of the physicians summering there, with the cordial coöperation of the landlady, formed themselves into a committee of investigation and made a formal search for the source of infection. The general water supply of the town, the milk supply, the water of the bay in which the resorters bathed, were all excluded by a careful study of the facts surrounding each individual case and the cases collectively, and then a search was made for the source of local contamination of the water or food supply. It was found that a manhole receiving the sewage and kitchen water from the dining-hall was distant but a few feet from two water tanks, in one of which vegetables and fruit were placed for cooling, and in the other, water for drinking purposes was collected. The manhole was of brick and not cemented, the water tank of wood. On pumping out the latter, water from the manhole was seen to ooze through the intervening six feet of soil. The defects were corrected and the epidemic ceased abruptly after nineteen days. The original case of typhoid was believed to have been one which occurred in the building several months before.

It is worthy of note that in both these epidemics the diagnosis of the disease, the detection of the source of the infection, and the application of the remedy were effected without dependence upon the services of expert bacteriologists or chemists, though in each instance confirmatory aid was obtained from experts in these lines. We mention these facts not to decry the value of these aids, nor to advocate the attempt to get along without them, but to show that the practitioner and the country doctor who may be far removed from city laboratories, may often by a careful investigation of an epidemic of this sort and by a close analysis of his cases reach an almost certain conclusion as to the origin of the trouble and suggest the proper remedy. His knowledge of the broad principles of bacteriology and infections will often serve him, though he may be unable to understand the details or practice the technique of bacteriology.

## DANGER OF UNPROTECTED FIREPLACES.

The British Home Secretary has published the statistics of child mortality from fire as given by 200 coroners in England and Wales for the years 1899 and 1900. From these it appears that there have been 1684 inquests of children thus sacrificed, and in 1425 of these the evidence showed that an unprotected fireplace was the cause. The use of open grates is almost universal in Great Britain and this appears to be one of the prices they pay for it. The associations with it are generally considered the most cheerful, and an open fire figures largely in the description of English home life in literature, but such a holocaust as the above figures indicate reminds one of the Druidical sacrifices of early Britain and is anything but cheerful to contemplate. Undoubtedly the conservatism that is characteristic of our transatlantic relatives will keep it up, to some extent, even after this revelation. Taken altogether, with its good and bad qualities, the American stove has its advantages in safety as well as efficiency over the open grate.

## QUACK METHODS IN HIGH PLACES.

Disreputable or questionable advertising methods are not restricted to any country, and we are probably as well off in this respect as are the transatlantic regions. At least we have no one here as prominent in surgery as a certain French operator whose alleged performances in connection with the Dreyfus trial, and certain still more recent events have excited not merely professional but also lay comment. Among the press dispatches from Paris we find the following: "Dr. Doyen's methods of advertising himself in connection

1. JOUR. A. M. A., Feb. 22, 1902, p. 509.
2. B. K. Rachford: Study of a Typhoid Fever Epidemic, Medicine, December, 1901.

with the operation of separating Radica and Dodica, the Hindoo twins, are exciting general disgust among Paris medical practitioners. M. Charles Laurent, in the *Matin*, has belled the cat by denouncing the quackery of France's foremost surgeon in indignant terms. Dr. Doyen, in the meantime, issues daily bulletins wherein he does not scruple to advertise patent nutriments supplied to the patients." When this sort of thing becomes of such public interest as to be mentioned in cable dispatches, the notoriety becomes hardly desirable, however profitable it may be in some ways. An international reputation of this particular kind would seem least of all to be sought for. But tastes differ.

### RESPIRATORY EXCHANGES IN TUBERCULOSIS.

Robin's claim that the respiratory exchanges in phthisis are exaggerated and that such excess in the non-tuberculous indicated a favorable soil for the disease, while the reverse conditions exist in arthritism, is already known to physicians. The importance of these facts, if they are such, seems hardly to have been duly appreciated, partly perhaps because, as stated by Robin, they emphasize the importance of heredity and predisposition. According to him, this exaggerated respiratory exchange is especially notable in the descendants of consumptives as well as in the victims of the disease themselves, though it may also be acquired by others through overwork, alcoholism, etc. In a recent session of the Paris Academy of Medicine[1] he again called attention to these facts and to certain deductions from the same, especially the facilities afforded for early diagnosis, the possibility of recognizing predisposition, and the new direction given to prophylaxis by suggesting the use of agents capable of retarding or restraining the organic tendency to retain too much oxygen and produce too much carbonic acid. Among these last he includes rest, especially in the reclining or recumbent position, and also certain medicinal agents such as cod-liver oil (ten ounces a day) tartar emetic in fractional doses, the arseniate and the cacodylate of soda. Temperature has also its effect; cold air diminishes production of carbonic acid; therefore, cold climates appear suited to the majority of consumptives provided injurious cutaneous exposure can be guarded against. The theory and its practical applications above suggested are apparently worthy of the attention of tuberculosis specialists, but so far we have seen very little published indicating that it has received their consideration.

### SURGICAL TREATMENT OF MITRAL STENOSIS.

The operative treatment of wounds of the cardiac muscle is one of the latest advances in surgery. Enough has been done to show that in a certain proportion of cases—nearly 25 per cent. according to the latest statistics—life can be saved by prompt intervention and suture of cardiac wounds, at least in special cases, and the future of surgical intervention will probably give better results than in the past. Improved technique based upon widened experience can hardly fail to show improved results. That the success already attained has been suggestive of still more daring operations in cases of cardiac abnormalities, is shown by a recent communication by Sir T. Lauder Brunton,[1] in which he discusses the feasibility of operation for the relief of mitral stenosis. Even a grave risk, he says, is perhaps justifiable for the chance of relieving the distressing symptoms that sometimes occur in this condition. Thus far his experimental work has been confined to the cadaver and to operations on healthy valves of cats, and very much more will be required to even make the operation a justifiable one. A needle wound of the ventricle, however, rarely gives rise to any hemorrhage and the knife need not be thicker than a needle, but in the auricle similar puncture may cause considerable bleeding. In experiments made for other purposes, Brunton says that he has often been surprised at the tolerance of the heart to manipulation, and it seems probable that this tolerance exists also in man. In operating, the knife should be introduced during systole as it is then less likely to wound the opposite ventricular wall. The pericardium should be opened, not only for the operation, but should be left open, to give exit to any oozing or hemorrhage, as the heart has little power to resist rapidly-occurring intrapericardial pressure. The paper is only a preliminary note and its suggestions are tentative merely, but it is noteworthy as indicating a trend of advanced surgical ideas. "The good results," he says, "that have been obtained by surgical treatment of wounds of the heart emboldens one to hope that before very long similar good results may be obtained in cases of mitral stenosis." The practical application of the suggestion is probably still only in the dim future if indeed it will ever be realized.

### HYGIENE OF BARBER SHOPS.

The importance of hygienic measures in barber-shops has been emphasized anew in an article by Dyer[2] upon dandruff. Dermatologists agree that a large proportion of the cases of baldness is secondary to a seborrheic disease of the scalp. There is no certainty as to the essential cause of seborrhea, different investigators of the subject having described various micro-organisms in connection with it. The microbacillus of Unna and Sabouraud appear to be quite constantly present. Whether there is any particular bacterium which is alone responsible for the disease or not, it is generally conceded that it is probably parasitic in its direct origin. If this be accepted, then the liability of carrying the infection from one person to others by means of toilet articles is apparent. To prevent this hair-brushes, combs, etc., should not be used as common property for an entire household, nor for an entire community as is the custom in most barber-shops, but each individual should possess and use his own brush and comb. Such articles should be thoroughly cleansed occasionally, and in barber-shops should be frequently disinfected. Shaving instruments also are undoubtedly the means of spreading certain infections of the beard, especially tinea sycosis. It is not unlikely that other diseases of the skin due to micro-organisms may also be carried in the same manner. Under the conditions which prevail

1. Medical Press and Circular, January 29, p. 113.

1. The London Lancet, February 8.
2. Medical Review of Reviews, 1901, 1003.

in the ordinary barber-shop this is liable to occur at any time. Hyde goes so far as to say: "Where the whole or any part of the beard is to be removed every adult male should shave himself." Most of the dangers referred to could be eliminated if barbers would apply the principles of antisepsis and asepsis in their work. It would be no hardship to sterilize razors, strops, brushes, combs and hands. Little apparatus would be required and that used could be very simple and inexpensive. Efforts have been made in various places to compel barbers to employ antiseptic measures in their shops, but it is difficult to force such matters. If it becomes a matter of business and of pecuniary interest to the proprietor of a shop to manage his place upon proper antiseptic plans, something may be accomplished. Physicians could do much to bring about the desired reforms by requiring the shops which they patronize to carry out the measures indicated in a systematic and thorough manner, and by advising barbers as to the best and simplest means which are efficient in accomplishing the desired results.

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### ACUTE DYSENTERY IN THE UNITED STATES.

The influence of the Rockefeller Institute for Medical Research is beginning to make itself felt. Reports of work done under its auspices are being published, and a very interesting and valuable one is that by Vedder and Duval on the etiology of acute dysentery in the United States.[1] It will be recalled that Shiga in Japan isolated a bacillus from the discharges in acute tropical dysentery. Subsequently Flexner and Strong found the same bacillus in connection with dysentery in the Philippines, and Kruse in Germany. The bacillus is known as Bacillus dysenteriæ (Shiga). The object of the work undertaken by Vedder and Duval was to show that the acute dysentery of this country is caused by the bacillus of Shiga. In order that a given bacillus may be regarded as identical with Bacillus dysenteriæ, it must show, of course, the same cultural and morphological characteristics as standard cultures of the typical organisms, and it must give positive agglutination reactions with sera of known dysenterics. Vedder and Duval record three groups of cases of acute dysentery occurring, one in Philadelphia (five cases), another in an institution in Lancaster (three cases), and the other at the Springside Home, New Haven (fourteen cases). In all these cases typical bacilli like Shiga's bacillus were isolated from the feces according to recognized bacteriological methods. As practiced, the agglutination reactions were made with the patient's blood serum and cultures obtained by Shiga, Flexner and others, and also with bacilli, isolated by the authors, and the blood of the patients from which they were isolated as well as with other serums previously shown to agglutinate Bacillus dysenteriæ. Finally they studied the agglutination produced by Shiga's antidysenteric serum. The general and unequivocal result of these studies is that acute dysentery in the United States is associated most closely with a bacillus indistinguishable from those obtained from epidemics in various parts of the world. The etiological relationship of Bacillus dysenteriæ of Shiga to sporadic, institutional and epidemic acute dysentery seems, therefore, to be well established. Physicians have good reason to feel happy over this demonstration; heretofore acute dysentery has been to a large extent an unsolved problem as regards the exact etiology, and the so-called institutional dysentery has been especially puzzling. While much work still remains to be done, particularly upon the mode of infection and upon the intelligent prevention of infection, it would seem that we have a most valuable diagnostic measure in the agglutination reaction, which seems to be fairly constant and definite.

1. Jour. of Exper. Med., Feb. 5, 1902, pp. 181-205.

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## Medical News.

### COLORADO.

**Fraudulent Diploma.**—Mrs. E. W. M. Cory, Denver, charged with obtaining a license to practice by false and forged evidence, has been found guilty. The complaint against "Dr." Cory set forth that she obtained a copy of a diploma from the University of Michigan by representing herself to be Dr. E. W. Moores, who graduated from that institution in 1884 and that her diploma had been destroyed by fire.

**Guardsmen Instructed in Military Medicine.**—The surgeon-general of the state, Dr. William W. Grant, Denver, has inaugurated a series of lectures on elementary subjects for the benefit of the National Guard. In his first lecture he quoted statistics to prove that the army surgeon should be a general practitioner rather than a surgeon. During the Spanish war 5000 men died from disease aside from wounds, while only 450 perished from gunshots. He discussed questions of personal cleanliness, the digestibility of foodstuffs, cooking and clothing.

**In Memoriam.**—The Denver and Arapahoe Medical Society held a meeting in memory of Drs. Clayton Parkhill and J. T. Eskridge, deceased members. The following program was carried out: Introductory remarks, Dr. Leonard Freeman, president; reports of resolutions committees, Drs. William C. Bane, and Josiah N. Hall; "J. T. Eskridge, the Public Spirited Citizen and Friend of the Court," Tyson Dines, of the Denver bar; "Clayton Parkhill, Citizen-Soldier," Brig. Gen. Irving Hale, U. S. V.; "Eskridge, Alienist, Neurologist, Scientist," Dr. Edward Jackson; "Parkhill, Surgeon and Anatomist," Dr. Josiah N. Hall; "Eskridge, His Extra Professional Character," Dr. William Munn, and "Parkhill, the Teacher of Medicine," Dr. Robert Levy.

### CONNECTICUT.

**Hartford Hospital Fund.**—The fund for the aid of the Hartford Hospital now amounts to $38,827, and $5000 has been donated to the permanent fund.

**General Hospital Society.**—At the annual meeting of this body at New Haven, Drs. Francis Bacon, Charles A. Lindsley, William L. Bradley and William W. Hawkes, all of New Haven, were elected directors. The prudential committee reported that the patients treated in the past year had paid $24,017, and that the receipts for the year amounted to $57,863.

**Litchfield County Hospital,** Winchester, has been publicly dedicated. It has been erected at a cost of $42,000, of which the state furnished $30,000. The officers of the hospital are Dr. Edward H. Welch, president; Dr. Arthur L. Clark, vice-president; Dr. William S. Richards, secretary; and Drs. William S. Richards, Edward L. Pratt, Edward H. Welch and William S. Hulbert, visiting staff.

**State Mortality and Infectious Morbidity.**—The January deaths in the state were 1172, 127 more than for the preceding month and 267 less than for the corresponding month of 1901. The annual death-rate was 15.4 per 1000. Infectious diseases were reported as follows: Smallpox, 32 cases; measles, 115 cases; scarlet fever, 360 cases; cerebrospinal fever, 2 cases; diphtheria, 225 cases; pertussis, 69 cases; typhoid fever, 31 cases, and consumption, 25 cases.

**New Haven Hospital.**—At the annual meeting of the directors of this institution, the following staff was selected: Attending physicians, Drs. Samuel D. Gilbert, William G. Daggett, Louis S. De Forest, Charles J. Foote, Max Mailhouse and John S. Ely; attending surgeons, Drs. Francis Bacon, William H. Carmalt, Thomas H. Russell, William W. Hawkes and Leonard C. Sanford; consulting physicians and surgeons, Drs. Charles

A. Lindsley, Robert S. Ives, Frank E. Beckwith, Walter Judson, William L. Bradley and Timothy H. Bishop; laryngologist, Dr. Henry L. Swain; ophthalmologist, Dr. Henry W. Ring; chemist, Dr. Herbert E. Smith; pathologist, Dr. Charles J. Bartlett, and obstetrician, Dr. Otto G. Ramsay.

## ILLINOIS.

**Incurable Insane.**—The 99 incurably insane patients assigned to the new hospital at Bartonville from the Illinois Eastern Hospital, Kankakee, were safely transferred, February 13.

**No Spitting in Decatur.**—Decatur passed an anti-expectoration ordinance, February 17, making it an offense punishable by a fine of from $2 to $5, to expectorate on any public sidewalk, doorstep or elevator.

**A hospital car** was attached to each of the five trains required to transport the Twenty-ninth Infantry from Fort Sheridan to the Presidio, en route to the Philippines. This was rendered necessary by the prevalence of measles at the post.

**Compulsory vaccination** has been ordered by the Chicago and Alton Railroad, under penalty of dismissal, and this mandate is said to take in president and office-boy. This road has also arranged to subject each passenger coach, at the end of each run, to thorough fumigation.

**Personal.**—Dr. Vincent J. Cohenour, Chicago, has located in Joliet.——Dr. Harry W. Giles, Wataga, has moved to Knoxville, and his brother, Dr. William N. Giles, Rio, succeeds him. ——Dr, William R. Kincaid and family, of Elkhart, have moved to Denver, Colo.——Dr. Albert J. Maris, Oakland, has located in Waterloo, Ind.——Dr. W. P. Davidson, Laplace, is about to move to Lovington.——Dr. George E. Krieger, South Chicago, has been appointed surgeon of the Inland Steel Company, with headquarters at Indiana Harbor.——Dr. J. Harvey Banks, Atlanta, will locate in Lincoln.——Dr. Clyde F. Horner, El Paso, has moved to Knoxville.——Dr. Preston Kyes, Chicago, has been appointed a Fellow in the Rockefeller Institute of Medical Research, and will leave for Europe April 1. ——Dr. D. C. Strong, Chicago, has been appointed house physician of the Wichita (Kan.) Hospital.——Dr. Edgar L. Phillips, a retired physician of Galesburg, will move to Goshen, N. Y., his old home.——Dr. Frank G. Kuhls, Aviston, has moved to Breese.——Dr. John F. Tidwell, Crab Orchard, has moved to Marion.——Dr. E. R. Lovesee, Harvard, has located for practice in Monticello, Wis.

**Healers Lose.**—The Supreme Court has decided that magnetic healers and osteopaths must have a license to practice, in the case of the People against George P. Gordon, an advertising "healer" of Rockford. Gordon was charged with practicing medicine without a license, and after trial the Circuit Court directed the jury to find for the defendant. The Supreme Court reversed and remanded the cause. The following is the text of the finding of the court:

> We all agree that the object of this [the statute] is to protect the sick and suffering and the community at large against the ignorant and unlearned who hold themselves possessed of peculiar skill in the treatment of disease, and to prevent them from holding themselves out to the world as physicians and surgeons without having acquired any knowledge whatever of the human system or of the disease and ailments to which it is subject. Without some knowledge of the location and offices of the various nerves, muscles, and joints the manipulation of those parts and the flexing of the limbs can not be intelligently, if, indeed, safely, practiced.
>
> Merely giving massage treatment or bathing a patient is different from advertising one's business or calling to be that of a doctor or physician, and, as such, to administer osteopathic treatment. The one probably falls within the profession of a trained nurse, while the other does not.

### Chicago.

**Resignation Demanded.**—Warden Healy of the County Hospital has asked the resignation of Dr. Herbert R. Hammond, a member of the attending staff, because he allowed an interne under his personal supervision to perform an amputation. This action the warden construed as a violation of the rule prohibiting internes from performing operations in which an anesthetic is administered.

**Scarlet Fever.**—The Department of Health in contrasting the mortality from scarlet fever and smallpox during the past three years shows that the mortality from the first was 924, while smallpox claimed only 7 deaths. It expresses the hope that in the munificent foundation of the McCormick Memorial Institution for Infectious Diseases—in which this infection is the first to be studied—that a disease, often more merciful in the life it takes than in the crippled survivor it spares, may finally be shorn of its terrors.

**Cook County Clinical School.**—The incorporation of the Cook County Clinical School, Chicago, is reported from Springfield. The incorporators are said to be Daniel D. Healy, John J. Hanberg and William McLaren. The first of these was president of the Board of County Commissioners, and is now warden of the County Hospital, and the second is president of the County Board. This looks strange, coming so soon after Warden Healy's radical decisions regarding clinics at the hospital, rights of internes, discipline of attending staff, etc., but perhaps it is merely a coincident.

**Pneumonia, Influenza and Cancer Mortality.**——In the last dozen years influenza has become not only an important factor in the mortality of the city, but as a mischievous complication has notably increased the death-rate from pneumonia, the deaths from which have increased 50 per cent. since influenza appeared in 1889. Cancer is increasing with frightful rapidity. In the decade ended in 1870 there were only 7.3 cancer deaths in every 1000 deaths from all causes in Chicago. In the decade ended in 1900 there were 28.9 such deaths in every 1000—an increase in thirty years of more than 80 per cent. Last year there were 1003 deaths from this disease in a total of 24,406 deaths from all causes—a proportion of more than 41 in every 1000, instead of the 7.3 in the decade of 1870, of the 14.5 in that of 1880, of the 19.8 in that of 1890 and of the 28.9 in that of 1900.

## INDIANA.

**Hospital for Garrett.**—A new hospital to cost between $35,000 and $50,000 is to be erected in Garrett. It will be called the Sacred Heart Hospital.

**Pledges for Methodist Hospital.**—The Methodist churches of Indianapolis, on February 16, raised $30,000 in subscription for the $200,000 hospital which it is proposed to build there.

**New College Building.**—Central College of Physicians and Surgeons, Indianapolis, has purchased a site on North Senate Avenue and will erect a new building for laboratories and recitation rooms thereon.

**Indiana Mortality for January.**—The reports to the State Board of Health show a decided improvement in the health of the state as compared with the preceding month, and as compared with January, 1901. The number of deaths reported was 2829, an annual rate 13.2 per 1000. In January, 1901, there were 3460 deaths, or 16.2 per 1000. The number of deaths from important causes were: Violence, 117; smallpox, 5; cancer, 83; puerperal fever, 12; diarrheal diseases, 20; whooping cough, 18; measles, 2; scarlet fever, 23, and diphtheria, 4.

## KANSAS.

**Douglas County Medical Association,** of Lawrence, has been incorporated without capital stock.

**The new Post Hospital** at Fort Leavenworth has been inspected by a board consisting of Major Henry P. Birmingham, surgeon, U. S. A., and Lieut. Herbert M. Smith, assistant surgeon, U. S. A. The building is now practically complete and will be ready to receive patients early in the spring.

**Appeals Against Medical Law.**—Dr. M. W. Wilcox, of Barton County, recently fined $50 for practicing medicine without a license, has appealed to the Supreme Court, the only question to be considered being the validity of the law passed by the last legislature requiring physicians to secure licenses before practicing in the state.

**Personal.**—Dr. Alfred C. Davis, Hamlin, has been appointed surgeon to the St. Joseph and Grand Island, and the Kansas City, Omaha, and Council Bluffs railways.——Dr. John W. Lauck, assistant surgeon at the National Military Home, Leavenworth, has resigned and will enter practice at El Reno, Okla.——Dr. H. H. McLellan, St. Mary's, has moved to Topeka. ——Dr. Meigs F. Thomas has been appointed physician at the federal prison, Leavenworth, vice Dr. David M. Dill, deceased.

## KENTUCKY.

**Non-Resident Physicians.**—The Kentucky State Board of Health notifies us that non-resident physicians can not be registered in the state.

**Dr. Rodman's Estate.**—The will of the late Dr. James Rodman, Hopkinsville, was probated February 23. The estate is valued at nearly $100,000.

**Epileptic Colony.**—A bill has been introduced in the senate establishing an epileptic colony at Lakeland Asylum, and appropriating $75,000 for the purpose named.

**Dr. John Mason Williams,** Louisville, who was sued for alleged malpractice, was given the verdict by the jury, Feb-

ruary 18, evidence showing that the plaintiff's condition was due to disobedience of the orders of his physician.

**Personal.**—Dr. Charles H. Voorhies, Jr., has been re-elected health officer of Lexington, and Dr. S. L. Holm, city physician. ——Dr. James H. Souther, Three Forks, has moved to Alvaton. ——Dr. W. O. Green has resigned as clinical lecturer on rectal diseases in the Kentucky School of Medicine, at Louisville.—— Dr. Vernon Robins, city chemist and bacteriologist of Louisville, has fitted up a laboratory in the City Hall.

## MAINE.

**Bowdoin Medical College** opened its spring session with a freshman class of 38.

**Hospital Association Meets.**—The General Hospital Association of Knox County, at its annual meeting, elected Dr. John M. Wakefield, Warren, president; Dr. Willis F. Hart, Camden, vice-president; Dr. Addison R. Smith, Rockland, secretary, and Dr. Walter M. Spear, Rockland, treasurer. The hospital will be ready for occupancy in April or early in May.

**Personal.**—Dr. J. M. Lowe, Vinalhaven has entered the Central General Marine Hospital, Lewiston, as an interne, to succeed Dr. D. A. Barret.——Dr. O. M. Head, North Chesterville, has associated himself with Dr. Benjamin F. Makepeace, of New Sharon, who, owing to spinal disease, has been obliged to confine his practice to office work.——Dr. James F. Hill, Waterville, has been appointed assistant surgeon National Guard of Maine and also examiner-in-chief of the Maine Grand Lodge A. O. U. W.——Drs. Alfred Mitchell, Jr., and Richard B. Small have been elected to the staff of the Maine General Hospital, Portland, as adjuncts in surgery.——Dr. W. L. Hayes, city physician of Gardiner, has resigned and located in Massachusetts.

## MARYLAND.

**Phi Beta Pi Banquet.**—The members of the Phi Beta Pi fraternity of the College of Physicians and Surgeons, numbering about 40, held their banquet, February 18.

**Personal.**—Dr. John Arthur Luetscher, Baltimore, has been appointed lecturer on normal physical diagnosis in the Woman's Medical College.——Dr. R. R. Crothers, of Elkton, had a paralytic stroke, February 21.

**Maryland Woman's Quarter Club Sanatorium.**—Drs. William Osler, William H. Welch, L. McLane Tiffany, I. E. Atkinson, S. C. Chew and Robert Johnson have agreed to serve as a committee which will co-operate with the state authorities in procuring a suitable tract of land for the proposed new Maryland Woman's Quarter Club Sanatorium, and to serve as trustees of the fund therefor.

**The quarter centennial** of the Johns Hopkins University was celebrated with great pomp and ceremony on February 21 and 22. Thirty-three honorary degrees were conferred, among them LL.D. upon Dr. John S. Billings, of New York, and that of M.A. upon Drs. W. T. Councilman, of Harvard University, Henry M. Thomas, and Robert L. Randolph, of Baltimore. A luncheon and reception was held by the trustees of the medical school of the hospital on the afternoon of the second day. Private receptions were held by Drs. Osler, Welch, Paton, Earle, Gilman and others. Dr. Hurd, of the Johns Hopkins Hospital, entertained President Angell, of the University of Michigan, and Dr. John S. Billings, of New York, the designer of the hospital.

## NEW MEXICO.

**Sanatorium at Silver City.**—The Sisters of Mercy have decided to build a large sanatorium in Silver City.

**Sanatorium for Raton.**—Eastern capitalists intend to build a sanatorium at Raton, to cost $100,000 and to accommodate 150 patients.

**St. Joseph's Sanatorium,** Albuquerque, is almost completed and will be ready to receive patients early in April. The cost of the building will be about $40,000.

**A solarium** is being built at the Government Sanatorium for Tuberculosis at Fort Bayard. During the last two years the government has expended about $200,000 on this institution and has put in a new sewerage system, waterworks, etc.

## NEW YORK.

**Olean General Hospital** directors have purchased a lot and building for $6000 and will be given possession in May, when the building will be remodeled for hospital uses.

**Isolation Hospital Donated.**—Mr. Robert M. Bruce has donated a 15-acre plot of ground to the town of Greenwich and will erect thereon a number of one-story buildings to be used as an isolation hospital.

**Through Regular Channels Only.**—The Commissioner of Charities and Corrections of Syracuse has notified the physicians of the city that the department will not pay for the hospital service rendered any patient (emergency cases excepted) unless he or she be committed by the department physician.

**Quinquennial Vaccination.**—A bill has been introduced in the senate by Dr. McCabe, of Brooklyn, which provides for free and compulsory vaccination of all inhabitants of the state who come under the control of boards of health. If passed, it means enforced vaccination once every five years.

### Buffalo.

**Dr. John A. Fordyce,** New York, gave an address, illustrated by stereopticon of clinical and pathological cases in dermatology, before the Academy of Medicine. Preceding the meeting a dinner was given in his honor at the Saturn Club by Dr. Grover W. Wende.

**Swine and Smallpox.**—Dr. William G. Bissell and Charles H. Zink, D.V.S., have made the following preliminary report on the investigation of a peculiar dermal disturbance in swine and its possible relation to smallpox; based on the discovery of the existence of a disease of septicemic origin with papular and pustular appearances, resembling smallpox, in swine brought from a particular part of the country:

1. The unusual disease noticed in swine is not of the same nature as smallpox.
2. In the opinion of the investigators, it is impossible by any known means of inoculation, to communicate smallpox to swine.
3. There is an infectious agent present in vaccine that is distinct from that present in the virus of smallpox.
4. The peculiar dermal disturbance, as seen in the swine, is of unusual occurrence in this section of the country, and so far as it has been possible to ascertain, it is not described in the literature of the day.
5. Inoculation of swine with the virus of smallpox does not confer immunity to vaccinia.
6. Most of the reports of the transmission of smallpox to the lower animals are without scientific substantiation.
7. The investigators would suggest that with a more complete study into the nature of the variolæ of the different domesticated animals, a greater distinction, rather than a closer relationship, will be established, and that the relationship between these diseases and smallpox, with a possible few exceptions, will be found equally remote.

### New York City.

**Dr. Beverly Robinson.**—As a token of esteem, physicians formerly connected with the staff of St. Luke's Hospital have presented to Dr. Robinson, one of the visiting physicians, a handsome silver cup.

**Hebrew Hospital in Brooklyn.**—A number of wealthy Hebrews of Brooklyn have taken the first steps toward the establishment in that borough of a Hebrew hospital. They have formed the Jewish Hospital Society, which has a membership of 600, and already $25,000 has been pledged.

**Women and Physicians for School Inspectors.**—Of the 110 school inspectors appointed for the Borough of Manhattan by President Cantor, 44 are women and 22 physicians. Mr. Cantor believes that by placing two women and one physician on each of the local boards in the borough, the inspections will lead to much better practical results, and school life will be materially improved.

**An Immoral Healer.**—Dr. John Armstrong, formerly of Gloversville, N. Y., but now of Queens County, is under arrest on the complaint of a 15-year-old girl, who alleges that the medical treatment she was compelled to undergo by her mother at the hands of this practitioner was such as to be subversive of good morals. The mother and a number of fashionably gowned women appeared in court, in the double rôle of patients of Dr. Armstrong and as witnesses in his behalf. The description of the method of treatment employed by this healer was such as to lead the District Attorney to insist upon a most searching investigation. Incidentally, it may be mentioned that this "vital force healer," as he styles himself, made a pitiful appeal to the magistrate to allow him to replenish his stock of morphin, as he uses this drug to steady his nerves. He says the "vital force" is transmitted to his patients through his hands, but his healing power is "like many of the things in the Bible, indescribable." Judging from the comments made at the trial his therapeutic methods are likewise "indescribable," though he assured the court that "there was nothing immoral in his methods except in the eyes of the impure."

## OHIO.

**The Cleveland Medical Journal Company** has been incorporated with a capital stock of $6000.

**Gifts to Cleveland Hospitals.**—Mrs. Mary H. Castle, Cleveland, has given $10,000 each to the Huron Street and Lakeside hospitals.

**Illegal Prescriber Fined.**—J. P. Berney, Cincinnati, a colored, unregistered practitioner pleaded guilty to illegal prescribing and was fined $21 and costs.

**Fifty-Thousand-Dollar-Eye Suit Decided.**—Dr. Frank S. Wagenhals, Columbus, who was sued for $50,000 by a convict whose mutilated eye he removed in order to save the other eye, has been vindicated by the court, which found in his favor.

**Sanatorium Burns.**—The Central Ohio Sanatorium at Fountain Park, recently purchased by Drs. George W. Pickering and Robert M. Henderson of Urbana and Dr. Clarence M. McLaughlin, Westville, and equipped by them, was burned, February 8. The patients were all rescued, but the building is a total loss.

**Letting Down the Bars.**—On account of the agitation engendered by the law requiring all applicants for license to practice medicine to pass an examination before the State Board, Representative Painter of Wood County has introduced a bill which provides that all Ohio medical students matriculating in any recognized medical college of the state on Jan. 1, 1902, or thereafter, may upon graduation begin the practice of their profession without taking the medical examination as given by the State Medical Board.

## PENNSYLVANIA.

### Philadelphia.

**The Resignation of Dr. D. D. Stewart** as professor of diseases of the stomach was recently accepted by the Board of Trustees of the Polyclinic Hospital. Dr. Joseph Sailer was elected to fill the vacancy.

**Weir Mitchell Honored.**—At the public exercises held by the University of Pennsylvania on Washington's birthday, Dr. S. Weir Mitchell read an original, scholarly finished and impassioned poem, and was one of several distinguished persons who received honorary degrees.

**Resignations from Orthopedic Hospital Staff.**—Dr. S. Weir Mitchell recently resigned as senior physician from the Orthopedic Hospital and Infirmary for Nervous Diseases. He had held the position for thirty years. Dr. John K. Mitchell was elected to fill the vacancy caused by his father's resignation. The resignation of Dr. J. Madison Taylor, as assistant physician, was also accepted. The elder Mitchell remains as consulting physician to the hospital.

**Roswell Park on Medieval University Work.**—Dr. Roswell Park, of Buffalo, N. Y., on February 19, delivered an address to the Medical Society and the medical students of the University of Pennsylvania, under the auspices of the Charles K. Mills Neurological Society. The address on "University Work in the Middle Ages" was a graphic portrayal of student life and of the overshadowing hand of the church in medieval times, and of the final emancipation of the practice of medicine from the domination of the church.

**Vaccination or Filth.**—Great interest in medicolegal circles was recently aroused by trial of a certain case in Common Pleas Court. Damage suit was brought by Mrs. Bridget Nugent against Dr. Harvey M. Righter to recover for the death of her 6-year-old child, which Dr. Righter had vaccinated. The attorney for plaintiff is an antivaccinationist, and persisted in displaying his theories, though the judge constantly ruled that the matter was irrelevant. Members of the Antivaccination Society were on the witness stand. Plaintiff alleged that Dr. Righter, in vaccinating her child, Sept. 11, 1900, used impure virus; that his method was careless; that, as a result, impetigo contagiosa developed, from which the child died October 20. Plaintiff further alleged that defendant did not exercise proper skill and diligence in the treatment of the latter disease. To the reputable doctors who heard the testimony, much of it by eminent physicians or experts, it seemed to be conclusively shown that Dr. Righter had used much more than ordinary care in the vaccination; that the impetigo, which did not develop for nearly a month after vaccination—the vaccination wound having healed—could by no possibility have been introduced at the time of vaccination, the period of incubation of impetigo being a few days at most; furthermore, that defendant recognized the disease and gave eminently proper treatment, and that he exercised unusual diligence in the case. Contributory negligence on the part of the plaintiff seemed to be established by the testimony of several physicians, all of whom testified to the filthy hygienic conditions of plaintiff's home. As to the latter, several witnesses for plaintiff were called who testified to the cleanliness of the surroundings. Referring to the conflicting testimony on this point the judge in his charge to the jury said:

> It is for you to say which of the witnesses you will believe. It is for you to say whether it is probable that these physicians would come here and swear that a condition of filth existed when it did not exist. Is it likely that they would come here to do that? Have they any motive for coming here to tell you, in the presence of God, a lie like that? It seems to me that perjury exists somewhere in this case.
>
> If you conscientiously come to the conclusion that the defendant was guilty of any negligence, or want of ordinary care and diligence, resulting in the injury to the plaintiff complained of, you will not hesitate to say so by your verdict. But if, on the contrary, you come to the conclusion that the plaintiff's complaint is altogether unfounded, then it concerns not only the interest of the parties in the present cause, and not only the interest of public justice, but also the established medical fame of this city, a fame established by many examples of men great and distinguished in this profession, who have lived and labored and died—that you put an end, so far as you can, to experiments by unjustifiable lawsuits against skilful, attentive and humane physicians.

The jury, after deliberating twenty hours, returned a verdict for the plaintiff, awarding her $1000 damages. Many of the profession in the city are aroused and indignant at what they believe an unjust decision. Not only individual members but medical societies purpose taking a vigorous part in continuing the fight of the case in the courts.

## GENERAL.

**New Marine Hospitals.**—Bills establishing marine-hospitals at Pittsburg and Savannah were ordered favorably reported by the House Committee on Commerce at Washington, February 14.

**Smallpox.**—During January there were 11,015 cases of the disease in the United States, and 253 deaths, a death rate of 2.25 per cent., approximately.——The number of new cases in Philadelphia for the week ended February 22, namely, 63, was the smallest reported this year.——For the first two weeks of February there were reported to the New York Health Department 119 cases of smallpox and 24 deaths from this disease. The people are disposed to believe that "the chief horror of smallpox" is to be found in the compulsory removal from home and friends and isolation. This feeling has been voiced in the daily press in the popular demand for the building of a private smallpox hospital. Although the agitation is only a few days old there seems to be little difficulty in raising the necessary money. If the plan were to build a new pavilion to some existing hospital, such as the Minturn Hospital for contagious diseases, it could probably be carried out for $50,000, but if a separate hospital is to be erected, the cost would easily be double this amount. It is stated that last year Mr. Carnegie offered to the managers of the Minturn Hospital $50,000, but it was declined because of the difficulty experienced in finding a site for such a hospital in the Borough of Manhattan. A new center of infection has just been discovered in a densely populated quarter of Williamsburg, inhabited by negroes.——On February 17 the eleventh case of smallpox at Baltimore was sent to quarantine. It is supposed to have originated in contagion among the crew of a steamer from Liverpool, the captain of which mistook a case of smallpox for peritonitis. The twelfth case of smallpox developed February 21. The contagion was traced to Philadelphia.——Smallpox was reported in the following counties in Indiana during January: Shelby 9 cases, Dearborn 11, Union 2, Knox 12, Perry 12, Dekalb 1, Howard 1, Vanderburg 11, Marshall 7, Warrick 27, Morgan 23, Adams 3, Gibson 3, Marion 34, Greene 26, Montgomery 43, Wayne 8, Wells 6, Fountain 50, Grant 10, Owen 17, Wabash 12, Decatur 2, Daviess 15, Pike 7, Monroe 8, Vigo 2, Jefferson 17, Delaware 3, Spencer 60, Floyd 9, making a total of 461. Five deaths from the disease occurred.——In Michigan during the week ended February 1, the disease was reported at 139 places.——Dr. Frederick Dillingham, assistant sanitary inspector for Manhattan, furnishes the following comparative table of cases and deaths from the disease in January, 1901, and January, 1902:

| State. | January, 1901. Cases. | Deaths. | January, 1902. Cases. | Deaths. |
|---|---|---|---|---|
| New York | 82 | 11 | 295 | 25 |
| Pennsylvania | 20 | 1 | 581 | 81 |
| New Jersey | 7 | 0 | 327 | 47 |
| Minnesota | 425 | 3 | 1740 | 11 |
| Illinois | 94 | 2 | 176 | 1 |
| Wisconsin | 299 | 1 | 4357 | 23 |

Smallpox in modern times, says the Health Commissioner of Chicago, does not merit a tithe of the concern its appearance in a community always excites. A hundred years of vaccination has demonstrated that smallpox is one of the most easily controllable of diseases. The higher the degree of civilization

in a community or a country, as measured by its work in sanitation and preventive medicine, the less the importance of smallpox. In Chicago the deaths from the disease have steadily diminished from 17.5 in every thousand deaths from all causes in the ten years between 1861 and 1870 to 4.9 in the ten years 1891-1900—a decrease of 71.5 per cent. from the earlier proportion. Smallpox is a vanishing disease. No one need—no one can—"catch" it except through a culpable, if not criminal, neglect of vaccination.

## CANADA.

**Dr. George K. Grimmer** has been appointed assistant laryngologist to the Western Hospital, Montreal.

**McGill University.**—The total number of students attending classes at McGill reaches 1114, distributed as follows among the different faculties: Law, 60; medicine, 490; arts, 294; applied science, 254; veterinary science, 16.

**New Superintendent of the London Asylum.**—Dr. T. A. McCollum, of Dunnville, Ont., has been appointed to the superintendency of the London Asylum rendered vacant through the unfortunate death of Dr. Bucke. Dr. McCollum has been a leading surgeon of the Niagara Peninsula for the past twenty years.

**Toronto University Medical Building.**—The problem of how to solve the financial aspect of the new medical building for Toronto University has been solved by the adoption of the suggestion of the Minister of Education. The trustees of the University will advance the money upon which the medical faculty will pay 4 per cent. interest per annum. To this the government will give its approval.

**Low Birth-Rate in Ontario Cities.**—The total births recorded in Ontario in 1900 was 46,127, as compared with 44,705 in 1899. There has been an actual decrease in every city in the province excepting Ottawa, Lordon, St. Catherines and Guelph. The birth-rate of 23.4 in 1891 has decreased by some 20 per cent. in the various cities of Ontario. Applications for insurance in 1862 showed 7.8 children per family, and in 1900 6.7, a decrease of 14 per cent.

**Death of Dr. R. M. Bucke.**—Dr. Richard Maurice Bucke, superintendent of the Asylum for Insane at London, Ont., a prominent alienist, and lifelong friend and literary executor of Walt Whitman, accidentally slipped on the ice on the veranda of his residence on the evening of February 20, instant death resulting. Dr. Bucke was born in 1837 in Norfolk County, England. He was graduated from McGill University in 1862, the gold medallist of his year. He was appointed to the London Asylum in 1877.

**Fewer Births and More Deaths in Montreal.**—The report of the health department of the city of Montreal for 1900 shows that although the population has enormously increased since 1891 there has been a tremendous falling off in the birth rate. In 1891 the birth-rate was 48.87 per thousand of the population; in 1900 it was 34.26. The rate for marriages for 1891 was 9.65; in 1900 it was 7.76. With a population of 218,268 in 1891, the death-rate was 24.24; while in 1900, with a population of 288,658, the rate is 25.46.

**Ontario Hospitals Association.**—The leading hospitals of Ontario have just organized an association under the above title. There is said to have been a great falling off in hospital funds recently, which may be laid at the door of the Ontario government, which recently cut down the hospital grant to 30 cents per day. The Association will seek a larger grant and also ask for powers to conduct provincial examinations for nurses' diplomas. The Association will meet annually in Toronto. Dr. John Ferguson, of the Western Hospital, Toronto, has been elected secretary-treasurer.

**Annual Meeting, General Hospital, Montreal.**—At the annual meeting of this institution held last week the report of the secretary showed that for the eight months ending Dec. 31, 1901, the ordinary income had been $50,183 and the ordinary expenditure $60,287. During that time 1,919 indoor patients had been treated to a conclusion. Of these 154 remained over from the previous year; and 168 remained in the hospital at the end of December, 1901. The death-rate was 7.7 per cent. as compared with the previous year, 8.5 per cent. In the outdoor department there were 20,189 consultations.

**Notices in Hospitals Respecting Charges.**—"Hospital authorities should post up notices in all hospitals stating the conditions under which patients are charged for doctors' attendance. Then the contract would be clear." This is the manner in which one of Toronto's judges delivered himself in the case of a local physician who was suing the executors of an estate for professional attendance rendered the testatrix. The doctor was on the staff of the hospital as a junior surgeon; and the defense entered the absurd plea that because he was attached to the hospital in that capacity it was understood that he was rendering his services free. Judgment has been reserved.

**The Hospitals of the Penitentiaries.**—According to the report of the Inspector of Penitentiaries for Canada, recently handed to the Minister of Justice, the population in these institutions during the past year numbered 1382, as against 1424 for the previous year. During the year there were 22 deaths, as compared with 22 in the previous year. Special attention is called to the health of the convicts in the St. Vincent de Paul penitentiary, in Quebec Province, which the surgeon in charge has frequently admitted to be unsatisfactory. In this respect the inspector has made special investigation and finds, in his opinion, that the fault lies in a vicious drug habit. During the year about 150 pounds of tincture of opium and about 10,000 morphin pellets passed through the dispensary of the institution. The inspector, therefore, believes that the unsatisfactory state of health in the St. Vincent de Paul penitentiary can be directly traced to too much quieting and soothing medicine.

## FOREIGN.

**Virchow's Recovery.**—The last mail brings the welcome news that Virchow's recovery is progressing smoothly. Callus has developed normally and the limb can be moved freely. He is able to sit up, but becomes easily fatigued. Five weeks have elapsed since he fractured the neck of the femur when alighting from a street car.

**Thirty-first German Congress of Surgery.**—Seven communications on the principal question, the Treatment of Wounds, have been received for this congress, which meets at Berlin, April 2 to 5. Gussenbauer, Petersen and von Mikulicz will discuss the subject of cancer; abdominal surgery will have numerous representatives.

**Prussian Appropriations for Scientific Research.**—The Prussian Budget for 1902 appropriates 20,000 marks for further study of means of prevention and early diagnosis of typhoid fever. The sum of 10,000 marks is given to the Committee for Cancer Research, and 53,000 marks are to be applied to the erection and maintenance of a cancer ward and laboratory in connection with the Charité Hospital at Berlin.

**Organization in the Profession in Switzerland.**—The various medical societies in Switzerland, speaking French, German or Italian, have combined into a central organization. The newly organized Medical Chamber is to watch over the material interests of the profession and promote the measures dictated by circumstances. It is also to transmit the wishes of Swiss physicians in questions regarding the public health and the care of the sick, to the proper civil authorities.

**Honors to Physicians Abroad.**—The golden professional anniversary of Professor Marey, of Paris, was celebrated by his friends, January 19. A portrait medallion was presented to him, the work of Dr. Paul Richer, member of the Acad. de Medecine, who is quite a fine sculptor. One of his groups received a prize at the recent exposition and salon.——Dr. A. Fraenkel's twenty-fifth anniversary as privat docent was celebrated, January 30.——Professor A. Murri of Bologna was the recipient of a medallion and other homage on his recent silver jubilee.

**New Sanitary Law in France.**—The recently enacted public health law in France requires vaccination within the first year after birth and re-vaccination during the 11th and 21st years. Parents or guardians are held personally responsible for the execution of this law. It also has a provision enacting that whenever the mortality in any commune exceeds the average mortality in France during three consecutive years the departmental council of hygiene shall be called upon by the prefect to make an investigation, either by itself or a commission, into the sanitary conditions.

**Eddyism to be Debarred from Court Circles.**—The *Norrd. Allg. Ztg.* officially announces that Kaiser Wilhelm has expressed his disapproval of faith healing, Eddyism, and other modern fake medical methods, as nuisances (Unfug) unworthy of our day and age and of the imperial capital. In a recent conference on the subject with the chiefs of police, he asserted unequivocally that persons participating in such proceedings will be excluded from the imperial court. The *Deutsche Med. Wochenschrift* applauds this resolution, and says that it will have far more influence than any appeals to reason and common sense.

**The Plague in India.**—A correspondent who resides in North India makes a gloomy prognostication as to health conditions there. The rain has failed absolutely, not a drop having fallen from the end of August to the middle of January and in the hill reservoirs there have only been two and one-half inches of rain since the beginning of September. The springs which feed the great rivers are drying up and famine threatens. The plague is advancing by leaps and bounds. There were several cases in January in the City of Lahore and the natives were in a state of terror. What they fear is not the plague—to that they are willing to submit in a fatalistic way—but they are in terror lest they should be inoculated by force, which they think means poison. A high official of the Punjab informed our correspondent that for the last few years he had been in the habit of regarding the number of cases of plague which occurred during the first three months of the cold season as a scale by which to gauge its increase during April and May, before it is beaten down by the fierce heat. In former years the number has been below 300 in the early part of the season, rising to 10,000 in April and May. This cold season, however, the cases in the first three months of the cold season have been 24,000, and it can only be hoped that the ratio will not be the same as in former years. The plague committees are dividing up the province into districts and make frequent visits endeavoring to keep the occupiers of houses on the alert to see that there are no nuisances nor any unreported deaths.

## LONDON LETTER.

### The Smallpox Epidemic.

The number of patients in hospital for the week ending February 8 was 1102, against 877, 870, and 1135 of the previous three weeks; 287 new cases were admitted in the week against 213, 204, and 499 in the three preceding weeks. The daily number of cases notified from February 8 to February 13 were 32, 23, 48, 58, 58 and 54. Since August 3000 cases have been admitted to Metropolitan hospitals of which 523 were fatal, 1647 were discharged cured and 1002 remained under treatment. In addition 270 cases were admitted from areas outside the metropolis.

### Clinical Instruction in Smallpox.

The Metropolitan Hospitals Board has prepared regulations relative to clinical instruction in smallpox and recommended the local government to modify the terms of its order so as to remove the obligation of residence at present imposed on students in smallpox hospitals. The principal points are as follows: 1. No student shall be admitted until he has completed his third year, has held the offices of clerk and dresser, and obtained sanction to his attendance at the hospital. 2. The ordinary course of study shall consist of twelve demonstrations, and no student shall receive a certificate unless he has attended eight. 3. The fee shall be $21. 4. The means of conveyance to and from the hospital shall be by the Board's steamers. 5. Every student shall wear within the hospital a suit of brown holland overalls consisting of coat, trousers and cap, which the Board will provide. 6. Any qualified doctor may attend the hospital as if he were a student. 7. To give doctors who have not leisure to attend a course opportunities of seeing smallpox demonstrations will be given from time to time, the fee being $5 for one demonstration and $10 for three demonstrations. 8. The rules as to disinfection and vaccination will apply to all students.

### Air-Borne Smallpox.

The question whether the increased incidence of smallpox in the neighborhood of a hospital is due to conveyance of the disease through the air or by persons from the hospital has not been decided by epidemiologists. An investigation by Dr. Thresh, medical officer of health for Essex, made in connection with the present epidemic seems to show conclusively that the infection is air-borne. The hospital ships in the Thames are anchored on the Kent side, some 700 yards from the Essex shore, with which no communication is allowed. In 1895, when smallpox was prevalent in London and the ships were receiving numerous cases, the disease was constantly present in the neighboring district of Essex. The same fact has again been observed during the present epidemic. In August last a workman employed on the nearest point of railway to the ships was attacked. Other cases followed, notwithstanding all the efforts of the local authorities, who have a well equipped hospital. Within a radius of three-quarters of a mile of the ships no less than 8.8 of the population were attacked; beyond this 2.4 per cent., still further away .65 per cent. The evidence is further strengthened by the fact that in the part exposed to the prevailing wind 12 per cent. of the population were attacked, while in an area on which the wind rarely blew the rate was less than 1 per cent. Dr. Thresh thinks that the effect of the ships extends as far as two miles.

### Gallantry of a Surgeon in the War.

The king has conferred the decoration of the Victoria Cross upon Surgeon-Captain T. J. Cream, 1st Imperial Light Horse. During the action with De Wet at Tygerskloof on Dec. 18, 1901, he continued to attend to the wounded in the firing line under a heavy fire at only 150 yards, after he had himself been wounded, and only desisted when hit a second time and thought to be mortally wounded.

### Cheese Poisoning.

The medical officer of health for the city of London has reported an extremely interesting series of outbreaks of poisoning from cheese, which have occurred in various parts of London during the last three months and which have been traced to a common source. In October last certain cases of illness occurred in Bethnal Green which were supposed to have been caused by Dutch cheese sold by a local shopkeeper, who had bought it from a large firm in Finsbury. Nine persons were traced who had eaten the cheese and been taken ill. Samples were obtained from the Finsbury firm, to whom the remainder of the consignment had been returned, and who had purchased it from another city house. Many other cases occurred, and the symptoms in each were similar. No deaths resulted, and the symptoms passed off in 48 hours. The maker of the cheese did not detect anything unusual in its appearance when ripened ready for shipment. The poison was not present in all portions of the consignment.

### The Plague.

During the week ending January 11 there were 10,368 deaths from plague in India. In the city of Bombay 234 deaths from the plague occurred during the week ending January 11, being an increase of 37 upon that of the previous week. During the corresponding period of 1901 the plague deaths were higher by 78. The director-general of the sanitary department of Egypt in his report for the week ending January 19 states that during the week 17 fresh cases of plague and 14 deaths from the disease occurred in Egypt. The population are averse to notifying plague, and as a result it is mostly by dead bodies being found that the presence of the disease is known. Out of a total of 39 cases up to the present announced at Tantah 24 have been found only after death in their houses. During the week ending January 30, 12 fresh cases of plague occurred in Mauritius and 9 deaths.

### Statistical Report of the Health of the Navy.

This report, which has just been issued, shows that the death rate per 1000 was 7.27, an increase of 1.86 as compared with the previous year, and of 2.09 as compared with the average of the last three years. The stations which show the highest death rate are the Cape of Good Hope and West Coast of Africa (20.03), China (17.34) and East Indies (13.92); those which show the lowest are those of North America and the West Indies, 3.59. The total force afloat was 95,830. The total number of cases of disease and injury was 84,550—a rate of 882 per 1000—an increase as compared with the previous year, but a decrease of 11.2 as compared with the average of the last three years. The invalidating rate was 35.8 per 1000. There were 464 cases of typhoid fever with 124 deaths.

### War Casualties.

An official statement just issued gives the casualties in the South African war from the commencement to the end of January, 1902, as 86,459, which, however, includes 66,000 men sent home as invalids, the great majority of whom have rejoined their regiments. The actual reduction of the military forces through the war is 25,305, which is made up as follows: Killed in action, 5314; died of wounds, 1763; prisoners who died in captivity, 103; died of disease, 11,809; accidental deaths, 598; invalids sent home who have died, 474; missing and prisoners, 439. The casualties last month (January) were 3202, which were made up as follows: Killed, 153; wounded, 362; missing, 21; died of disease, 536; accidental deaths, 36; invalided home, 2104.

### Error in Teaching the Arrest of Hemorrhage in Ambulance Cases.

The old proverb, "A little learning is a dangerous thing," is illustrated by the correspondence evoked in the *Lancet* by a

letter of Mr. Walter G. Spencer, surgeon to the Westminster Hospital, showing that "first aid" in cases of hemorrhage rendered by persons instructed in ambulance classes often does more harm than good, and may even be responsible for a fatal result. Those who have attended such classes seem to think that they must always apply some sort of an improvised tourniquet to the limb above the bleeding point, while they have not learned the necessity of applying pressure directly to the wound. They do not understand that by applying an improvised tourniquet above the bleeding point with a degree of tightness short of absolutely controlling all circulation they cause venous obstruction. It is thus easy for a large part of the patient's blood to be forced out of a small wound. Entirely unnecessary hemorrhage is produced in this way in cases of superficial lacerated wounds, compound fractures and ruptured varicose veins. Thus, a man struck his leg against the corner of a box causing a minute puncture, such as might be made with a tenotome, in a varicosity behind the knee. His fellow workmen tied a handkerchief round the thigh sufficiently tight to cause venous obstruction, but did not apply pressure to the bleeding spot. This they had been taught. When the patient reached the hospital, the handkerchief was removed and the bleeding immediately ceased. He was profoundly anemic, and transfusion of saline solution had to be performed. Other examples given by Mr. Spencer are the cases of two men with superficial lacerated wounds near the elbows. A bandage was applied above the wound and bleeding continued severely. When they reached the hospital they were very anemic. Only the superficial veins had been divided. In the following case the improvised tourniquet seems to have caused death. A strong man, aged 20, sustained a compound fracture of the lower third of the femur. Immediately a handkerchief was tied round the thigh above the wound, and he was carried straight to the hospital. When brought in he was absolutely anemic; all the clothes of the limb were soaked in blood. The half-tight constricting handkerchief was removed, and no blood escaping a pad and firm bandage were applied to the wound. Infusion with 6 pints of saline fluid stimulating enemata, and drinks were all tried, but he died in an hour. Necropsy showed that the popliteal vessels were uninjured, only terminal branches of the profunda artery and vein were lacerated. Mr. Spencer insists that the application of direct pressure is the proper "first aid" in all cases. In the vast majority of cases there are only superficial lesions affecting small arteries and veins. In the rarer cases of hemorrhage from a large artery the wound must be pressed upon or too much blood will be lost while the tourniquet is being improvised. It only causes confusion to enter on the subject of the compression of main arteries in an elementary ambulance class.

## Correspondence.

### Letter from India.

BOMBAY, INDIA, Jan. 15, 1902.

*To the Editor:*—England has sent many of her best medical men to India for service in both army and civil hospitals. Bombay, the chief city of the Empire, is well supplied. The Grant Medical College is equipped for good work and the great hospital adjacent always teems with patients. At a surgical clinic recently held there eight capital operations were performed for various phases of tubercular infection; hip disease, amputation of forearm, peri-rectal abscess, deep cervical abscess, peritonitis, axillary glands, ankle joint and tendo-vaginitis of thigh. Many of the hot-climate ills are mere preparatory steps to general tuberculosis, whose ravages are fearful in the native population of the cities.

INCREASE OF PLAGUE.

Just now plague is again attracting attention. It is increasing rapidly in other parts of India and is spreading. The Plague Commission has made its reports. Nothing but the continued persistence of the pest has been seriously determined. Several thousand more people have perished from it this year than last year. There is, however, no panic. At this great seaport the fight is steady on the part of health officers. Physicians are at a premium and some have been imported especially for plague services. They are each paid about $300 a month. The city of Bombay provides hospitals and segregation camps for plague sufferers. There is a determined effort to break up the overcrowding of the people in infected parts of the city. In one house 15 feet wide, 100 feet long, and five stories high, 600 people were found living in the full depth of India squalor. They were moved to a camp of thatched huts on the coast front of the city where sea air and sunshine are abundant. Segregation camps in this climate are made of bamboo, matting and thatch, a good overhead protection against rain and direct rays of the sun, with ample openings on all sides for free circulation of air. Huts are about 15 by 20 feet on the ground, about 7 feet high at the eaves, with roof about 4 feet higher at the ridge pole than at the eaves. These camps appear most effective in the fight against the plague and are in line with ancient custom. In former plagues the people of infected towns and cities would move to new sites and rebuild. They learned this method of dealing with the black death and other plagues long before the Europeans came to India.

On a great building in a big garden, which was the seat of English government until cholera drove the inmates out, is a small sign which reads, "Imperial Research Laboratory." Here Professor Haffkine conducts the plague laboratory and makes a prophylactic serum which is being freely used. In some localities physicians think it very efficient. The government pays all the expenses of the institution and sends the serum free to all who will use and report upon it.

DEATHS FROM SERPENT BITES.

All sorts of research and serum work is done here. Typhoid, cholera and snake poisons receive special attention. The collection of cobras and vipers is large. Experiments with anti-venene are constantly being tried. They follow the methods of Weir Mitchell in collecting the venom. Thousands of people perish in India every year by the bites of serpents and it is hoped that the research laboratory may discover some efficient method of neutralizing snake venom before it has killed its victim.

QUARANTINE.

There is a plague quarantine against Bombay at all Red Sea, Mediterranean, Indian and East Indian ports. But it is modified by the time the ship has been at sea after leaving Bombay and whether she has had any outbreak of plague on board. To guard against this latter phase of the quarantine, a very careful examination is made of passengers and crew before leaving the harbor. The crew is under surveillance for at least ten days before going on the ship. The men are stripped and the port physician runs his hands over the lymphatics of neck, arm-pits and groins; looks at tongue; feels pulse and takes temperature by touch. If any have indurated glands, hot skin, quick pulse, or morbid tongues they are at once separated for re-examination. Any who are found with elevated temperature by the thermometer are rejected. If glands are enlarged also they are sent at once to a hospital for suspects, and if fever and peri-adenitis come on rapidly they are sent to the plague hospital. All passengers are examined the same way, but the cabin passengers are not stripped; a careful inquiry is made as to their general health and where they have been living. In an examination of a crew engaged for a voyage to China, I saw eight men selected for re-examination out of 160 who were examined; of those eight two were sent to hospital as suspects and six were found to have indurated glands due to other causes than plague germs. A high order of medical skill is required for these examinations. Not a ship is allowed to leave the harbor until Mayor Crimmis, M.D., health officer, and his staff have passed upon the entire ship's personnel and the disinfection of the ship and cargo. There is no perfunctory business about it, but thoughtful painstaking examination. So when a ship has been put through this course and no case of plague develops on board during the voyage of seven or eight days other ports do not hesitate to receive her.

If a passenger or member of the crew develops plague at sea he is isolated in a tent on top of the deck houses above the promenade awnings, where light and air are valued adjuvants in the treatment. He is given liquid foods. His glands are poulticed and encouraged to resist the invasion by the germs which commonly proceed from scratches and abrasions in the lower extremities. All open sores are washed with 1 to 1000

sublimate solution twice a day and the heart is supported by digitalis and strychnia. If sweats appear, fever and delirium subside, and the bubo continues to enlarge and fluctuates, recovery is hastened by incision and the evacuation of the pus. Several physicians whom I saw in Bombay have conducted plague cases to a favorable termination and in no sense despair of saving a fair proportion of their European cases. Some had plague themselves. They spoke of a tedious and tardy convalescence characterized by a great adynamia. Statistics, I am told, are not very trustworthy guides of the mortality from plague, because the death often results from the absolute neglect of the native by his friends. Good doctors told me that where they could have the cases from the start with good nursing they could save five out of six cases. Most of the deaths would occur in the pneumonic cases, which might at first be mistaken for pneumonia due to other causes. Early diagnosis is not easy. Here fevers are due to many things that do not occur in temperate climates. Sores of diver sorts are plentiful with lymphatic gland induration due to scratching simple insect bites. Oriental cases of malaria are so often seen that the real plague infection may be overlooked at the first visit. The chronicity of all these troubles and the sudden assault of the plague virus makes the diagnosis sure and prompt in the hands of cautious and skilful physicians. My inquiries in Bombay and other parts of India and at Aden lead to the inference that the serious obstacle to the control of plague by sanitation is the difficulty of breaking up the overcrowding of natives and of destroying rats and other vermin. Popular opinion has to be consulted in the East or the riots will kill more people than the plague. The Hindu will not destroy rats or other animals; it is contrary to his religion. He will die of famine before he will take food from the hand of a person of another caste and he can only be induced to enter the segregation camp by great effort and when paralyzed with fear. Now that plague and famine are both spreading in some parts, prospects are not everywhere bright in India.

### LIVER ABSCESS.

An American surgeon visiting this country usually wants to learn something about liver abscess. At home he has been told that it is the scourge of the tropics and is quite unprepared to learn that hepatic abscess is not much of an abscess in the northern meaning of the word. It has no abscess wall like pyosalpinx. When treated by incision and drainage it discharges bloody brown pus from the usual pus microbes of northern climates and is not nearly as plentiful in numbers as dysentery, which is the guide in its diagnosis, dengue, beriberi, elephantiasis and filariasis. At Indore, at Ujjani, at Mhow and Bombay I found cases in all stages from early to late inception, with vast destruction of liver tissue and death. A soldier reported sick had fever, pain and swelling in right side; had been losing flesh for two weeks, but kept about. Here was fluctuation at the costal margin near the median line. Incision evacuated a great amount of brownish clotted material. He died in 24 hours; autopsy revealed destruction of the greater part of the right lobe. Was it a rapid destruction of liver tissue with sudden fever and prostration, or was it a chronic lesion of the organ with sudden appearance of symptoms? Liver abscess here has always an antecedent history of dysentery or disease of the alimentary tract. It is distinguished from malarial and other fevers by a daily evening rise of temperature, usually 102 F. There is always enlargement of liver if carefully looked for; rarely enlargement of spleen. Quinin dosing has been usually tried and given no benefit. There is more or less pain, always in the region of the liver; tired feeling, loss of strength and rarely any jaundice, but the complexion is muddy. Natives, unless alcoholics, never have it. The patient usually dies of exhaustion or of lung complication if the abscess is not opened. All the surgeons I talked with confirm the diagnosis by resort to aspiration and treat the abscess by drainage. The cavity is syringed out with salt solution every day. The tube is left in as long as any cavity remains to hold it. The back part of the right lobe is the favorite location of abscess, but it is sometimes found pointing beneath the costal margin and is opened there. The favored place for introduction of aspirator trocar is between the eighth and ninth ribs in the axillary line. If pus is not found on aspiration once, they try two or three more thrusts, always with caution to avoid a long gall-bladder, portal veins and intestines. If fever does not abate and condition improve after opening one abscess, others are sought for in the same manner as the first. Chloroform is given for anesthesia throughout all India. Accidents are very rare.

HAL. C. WYMAN, M.D. (Detroit).

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## Arterio-Venous Aneurysms of the Subclavian Vessels—An Addendum.

NEW ORLEANS, LA., Feb. 2, 1902.

*To the Editor:* I regret that in preparing the text of this contribution the very interesting and instructive case of arterio-venous aneurysm operated upon by Dr. John F. Erdmann and reported by him to the New York Surgical Society, January, 1899 (see Annals of Surgery, pp. 618-622, vol. 29, Jan.-June, 1899) should have escaped my observation while compiling the bibliography. It presents so many unique features and is so encouraging from the operative point of view that it is well worthy of a special abstract in connection with the analytical study of the subject which has been attempted in this contribution.

The case is one of arterio-venous aneurysm of the left subclavian vessels outside of the scalenes, and is not an aneurysmal varix as erroneously stated in the title of the report. The patient, a gymnast aged 20 years, was accidentally shot Aug. 19, 1898. The bullet (revolver, 32 caliber) entered left chest wall about 1½ inches below the middle third of the clavicle. This was followed by an immense swelling in the neck which persisted for a week or ten days. The wound healed after the first week, leaving the corresponding arm cyanotic and weak. A loud bee-buzzing murmur and thrill could be easily recognized in chest, axilla and upper brachial region. After a rest of seven weeks without improvement it was decided to cut down upon the subclavian artery, ligate it, and sew the aperture in the vein.

Under ether anesthesia, the patient was operated upon Nov. 11, 1898, three months after the date of injury. After dissection, a band of cicatricial tissue in the tract of the bullet was found encroaching upon the third division of the left subclavian. Compression of this band of scar tissue completely arrested the bruit and thrill in the affected areas. This band of scar contained the channel of communication between the injured artery and vein and was three-eighths of an inch wide and one-eighth inch long, just allowing an ordinary aneurysm needle to pass between the vessels. While dissecting this scar channel, the communication was nicked and torn through about half its width. Bleeding occurred, but was readily checked by pressure with the aneurysm needle. The needle was withdrawn and the silk tied about the communication. Hemorrhage was thus absolutely controlled. Finding it impossible to ligate the proximal side without further dissection, the clavicle was sawed at the junction of its middle and inner thirds, with a Gigli saw. Considerable difficulty was experienced even then in exposing the subclavian on account of dense cicatricial matting of the tissues. Finally the plexus and artery were freed and a ligature was applied to the third portion of the subclavian just outside of the scalenes anticus, another about the artery at the beginning of the axillary. Then a ligature was placed about the communication and the original ligature of long silk removed. Owing to the time involved and the patient's condition, the portion of the artery between the ligatures was not removed. The clavicle was wired and the wound closed without drain. Dressings were applied to keep the extremity warm. At the end of twenty-four hours, the color of the fingers and forearm was of a healthier hue than for six weeks past. At the end of the sixth day feeble radial pulsation could be felt and on the tenth day, it was quite demonstrable.

The wound healed per-primam with slight necrosis of skin. Patient left his bed on the tenth day. Union of the clavicle was not solid, but improving at time of report two months after operation. Condition of the arm as to innervation and nutrition has improved since operation. No murmur or thrill since operation.

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In closing the analytical summary of the cases of arterio-venous aneurysm that the author has been able to collect from the literature it is important to revise the statistical conclusions as they are modified by the addition to the three remarkable cases recently reported by Vallas, Reboul and Erdmann which were not included in the statistics at the time when the text of this paper was written. In accordance with these new data the statistics must be amended as follows:

Total cases of arterio-venous aneurysm of the subclavian vessels reported, 18. Cases treated expectantly or without operation, 12. Operated cases, 6. Of the 12 unoperated cases, 2 died (Will's and Reboul's). Of the 6 operated, 2 died (Wattmann, Vallas).

Total mortality of the entire group, 4/18 or 22.2/9 per cent.
Mortality of the unoperated, 1/6 or 16.2/3 per cent.
Mortality of the operated, 2/6 or 33.1/3 per cent.

. While these figures are interesting as showing the gross mortality of this class of lesions when viewed as a whole, they also demonstrate once more the fallacy of statistics especially of small groups, as guides, in arriving at conclusions, when the individual cases are not subjected to critical and discriminating analysis. In fact, a study of the records shows that if the two deaths included in the non-operated group had been subjected to a timely intervention before the patients had been exhausted by protracted hemorrhage and other complications they would, in all probability, have been saved. On the other hand, the two deaths which appear in the operated group could not fairly be attributed to the operation as in both instances (Wattman's, Vallas') the operations were undertaken in desperate conditions, when septic infection and other grave complications had already darkened the prospect of recovery. In trying to arrive at a fair estimate of the mortality of the operated cases, the conditions under which the interventions were undertaken and the division of the subclavian tract involved, should always be considered. Viewed in this light, the cases of Wattmann and Vallas, in both of which sepsis existed and a rupture of a varicose sac was threatened by suppuration, should be eliminated from the non-septic and non-complicated group. If separate groups of such desperate cases were collected we do not doubt that the mortality would not fall short of 95 per cent. On the other hand, the recovery of the four patients who were operated upon early (Rötter, Veiel, Erdmann and the author) in comparatively uncomplicated conditions and in the accessible portions of the artery and vein (2d and 3d divisions) demonstrates that a radical operation can be undertaken with great prospect of success and with a mortality less than in the unoperated cases in similar conditions. If we still eliminate the cases in which the profuse hemorrhage has greatly exhausted the patients and group together the type of cases represented by Erdmann's patient and my own, in which the operation was undertaken for aneurysmal varix or varicose aneurysm of the 2d and 3d division of the artery and vein, after full recovery from the effects of the primary hemorrhage and shock has taken place, we will find the operative mortality reduced to a very low percentage perfectly compatible with the aims of a thoroughly conservative surgery.

The prognosis as regards the viability of the limb still remains a debatable question to be determined by future observations; but it is evident from the results of Veiel's case and my own, that a prudent reserve must be maintained on this important point before deciding definitely as to the comparative merits of expectancy and the radical operation in the group of cases last referred to. But even from this point of view it is evident, from the lessons gathered in my case, that further modifications of the technique will justify a far more aggressive attitude than in the past. RUDOLPH MATAS, M.D.

2255 St. Charles Avenue.

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### Tuberculophobia.

COLORADO SPRINGS, COLO., Feb. 6, 1902.

*To the Editor:*—The recent agitation in California shows a growing tendency to make the life of a tuberculous patient miserable. It is said to be done in the interests of the people and for the good of the states that are to bar these unhappy victims. But in fact it is due to nothing less than what may be called tuberculophobia. Physicians are to a great extent responsible for this. There are too many exaggerated statements about the contagiousness of tuberculosis. Here is a city built up almost entirely by its fame as a health resort for lung patients; also because no useless restrictions have been placed upon invalids. Yet it is a fact that there are hundreds of people in Colorado who came for their health, have regained it and taken up permanent residence, who now advocate the passage of laws restricting others from regaining their health in the same way. A young man from the East went to New Mexico over a year ago. He arrived in a town where he found the people so afraid of a consumptive that it was with the greatest difficulty he secured boarding, and he was unable to find a place in the town where he could rent a room permanently. Disheartened and discouraged he turned eastward again, only to die. Such fear is nothing short of criminal. It seems to me that the medical profession at least should be the friend of the sick. Even consumptives are entitled to some rights.

The plan suggested of isolating them in colonies like lepers is both inhuman and uncalled for. If there is anything depressing to the mental condition of a consumptive it is in being thrown into constant contact with so many others in his own state. Whatever may be the legal right of a state to shut the citizens of other states out from its natural advantages (though we doubt the legality of it) there can be no question about the inhumanity of such a law.

Any physician knows that tuberculosis is neither contagious nor infectious as the ordinary layman understands those terms. Yet we meet with people who will walk a block out of their way to keep from passing one of these poor victims. A few days ago I was called to see a man who works at one of the hotels in this city. He had a severe cold and an accompanying cough. His first question was: "Do you think I could have caught consumption?" I inquired how. "Well," he said, "there were some men stopping here who had it." I found out that the men referred to had stopped at the hotel over night, and my patient had an idea he might have taken it from them as he would smallpox. No word but "panic" expresses the present attitude toward this disease in some quarters.

JOHN INGLIS, M.D.

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### Sugar Testing with Haines' and Purdy's Solutions.

BUFFALO, N. Y., Feb. 17, 1902.

*To the Editor:*—The method of quantitating sugar in urine, reported by Dr. Wm. H. German, and credited to Mr. Carl Irenaeus in THE JOURNAL of February 1, apparently does not differ in principle from that of Dr. Purdy, yet the table does not seem to correspond proportionately to that published in Dr. Purdy's book. Is the "Purdy's solution" of different strength or what is the explanation? A. L. BENEDICT, M.D.

The above was submitted to Dr. German, who answered as follows: "The proportion of urine required in this test is larger than in the Purdy test, though the same copper solution is used. This is due to the smaller bulk of the test, a slight excess of urine being required to give a perfect end reaction."

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## Book Notices.

A MANUAL OF CLINICAL DIAGNOSIS BY MEANS OF MICROSCOPICAL AND CHEMICAL METHODS FOR STUDENTS, HOSPITAL PHYSICIANS AND PRACTITIONERS. By Charles E. Simon, M.D., author of Simon's Physiological Chemistry, etc. New (4th) Edition, Thoroughly Revised and Enlarged. In One Handsome Octavo Volume of 608 Pages, Illustrated with 139 Engravings and 19 Plates in Colors. Cloth. Price, $3.75 net. Philadelphia and New York: Lea Brothers & Co. 1902.

Four editions of this work have been issued in the brief space of five years. This is an indication not only of the excellence of the work, but also of what is even more gratifying, namely, a rapidly growing appreciation on the part of the general practitioner of the necessity of familiarizing himself with the methods of accurate clinical diagnosis, as it is work of this character that lies at the very foundation of all medical progress. The author presents the facts as they are known to-day in a clear and concise manner, and the frankness with which he acknowledges the many points that are not known instead of attempting to hide ignorance in misty theory, is highly commendable.

The first chapter of 137 pages is devoted to the blood, and the subject is admirably presented, with the exception of the use of the hematokrit. The author acknowledges that his enthusiasm for this instrument is dampened by the fact that he has only a hand machine, and the information which its use affords concerning the size of the corpuscles, "volume index," etc., is therefore entirely omitted. The importance which is attached to the urine is well shown by the fact that 250 pages are devoted to its consideration. We find no men-

tion made of the rapid quantitative estimation of urinary constituents by means of the volumetric method and the centrifuge, perhaps for the same reason that applied to the hematokrit. A chapter on transudates and exudates is of much interest and value, as is one on the cerebrospinal fluid.

The colored plates are nearly all original and well executed. The work is one which should not only be possessed, but constantly used by every practitioner.

AMERICAN EDITION OF NOTHNAGEL'S ENCYCLOPEDIA.—Variola (Including Vaccination), by Dr. H. Immermann, of Basle. Varicella, by Dr. Th. von Jürgensen, of Tübingen. Cholera Asiatica and Cholera Nostras, by Dr. C. Liebermeister, of Tübingen. Erysipelas and Erysipeloid, by Dr. H. Lenhartz, of Hamburg. Whooping Cough and Hay Fever, by Dr. G. Sticker, of Giessen. Edited, with Additions, by Sir J. W. Moore, B.A., M.D., F.R.C.P.I., Professor of the Practice of Medicine, Royal College of Surgeons, Ireland. Handsome octavo volume of 682 pages, illustrated. Cloth. Price, $5.00 net. Philadelphia and London: W. B. Saunders & Co. 1902.

The second volume of the Nothnagel series following so soon after the appearance of the first gives promise of early completion into English of this excellent encyclopedia. From the fact that nearly half of this second volume is devoted to smallpox, vaccination and chicken-pox, it will be especially welcome at this time. It is unnecessary to say that the treatment of these subjects is exhaustive. The historic and statistical phases are valuable, especially in their relation to prevention of smallpox by vaccination. No doubter could possibly read this monograph and resist believing in the efficacy of vaccination. Besides the above, the volume contains monographs on three common every-day diseases, erysipelas, whooping-cough and hay fever, as well as a treatise on the less common disease, cholera. One is rather surprised to see hay fever treated under the title "Bostock's summer catarrh," until one recalls the fact that it was first described by an English physician, John Bostock, who reported his own case in 1819.

The editorial revision has been exceedingly well done, and this, with the numerous additions made to bring the subjects well up to date, makes the volume superior to the original German edition. We would repeat the favorable comments we made on the previous volume.

THE MENTAL FUNCTIONS OF THE BRAIN, An Investigation into Their Localization and Their Manifestation in Health and Disease. By Bernard Hollander, M.D. (Freiburg L.B.), M.R.C.S., L.R.C.P. (London). Illustrated with the Clinical Records of 800 Cases of Localized Brain Derangements and with Several Plates. Cloth. Pp. 507. Price, $3.50. New York and London: G. P. Putnam's Son. 1901.

This work is an attempt to rehabilitate phrenology. The author thinks that the results of the investigations on the localization of functions in the brain confirm the deductions of Gall of nearly a century ago, and he makes the statement that no subject has ever been so thoroughly misrepresented even by men of acknowledged authority and no author has ever been left to such malice as Gall, notwithstanding there is not one man of scientific repute who has left anything that would indicate that he has examined Gall's chief work. We are under the impression that the recognition of Gall's services as an investigator has been more general than the author would admit. In fact, it is our opinion he has not been spoken of disrespectfully, even when the pseudo-science of phrenology has not been recognized. We do not find on perusal of the work any reason to adopt the author's opinions in regard to the minute localization which he claims, and phrenology stands in our minds in the same position it formerly occupied. The rather combative tone of the work we think is uncalled for, though, of course, in the attempt to demonstrate what has been repudiated by scientific men, some vehemence of statements might be expected. The book is well illustrated, and must have required considerable labor, and will undoubtedly be treated respectfully, even by those who do not agree with its conclusions.

A TREATISE ON ORTHOPEDIC SURGERY. By Royal Whitman, M.D., Instructor in Orthopedic Surgery and Chief of the Orthopedic Department of the Vanderbilt Clinic in the College of Physicians and Surgeons of Columbia University. Illustrated with 447 Engravings. Cloth. Pp. 650. Price, $5.50 net. Philadelphia and New York: Lea Brothers & Co. 1901.

This, the latest work on orthopedic surgery, is also one of the best thus far published, a coincidence which is often not the case. The author considers the subject in a manner born of an intimate personal knowledge of the conditions treated, and in a style that is both interesting and pleasant. The relative frequency with which the different conditions present themselves to the surgeon has been used as a basis for determining the amount of space to be devoted to each. The wisdom of such a division of space is questionable, for it is usually the case that the rarer conditions are the ones most difficult to diagnose, and therefore most frequently overlooked or mistaken. Thus, more space could with advantage have been devoted to such subjects as syphilitic diseases of the joints, hysteric spine, joint diseases in connection with diseases of the nervous system, some of the painful affections of the feet, etc. The common affection, such as Pott's disease, tuberculosis of the hips, lateral curvature of the spine, etc., are admirably handled, and these chapters are replete with useful and valuable suggestions.

APPENDICITIS: ITS PATHOLOGY AND SURGERY. By Charles Barrett Lockwood, F.R.C.S., Assistant Surgeon and Lecturer on Descriptive and Surgical Anatomy in St. Bartholomew's Hospital. Cloth. Pp. 287. Price, $2.50. London and New York: Macmillan & Co. 1901.

The author in his introductory chapter makes an earnest plea for a correct use of terms, and decries the so-called classifications which are so much in use, but which are more or less confusing in that they are not self-explanatory. Chapters two and three on anatomy and histology give a clear and concise statement, particularly with reference to the blood, nerves and lymphatic supply, but the relations of the peritoneum are not as clear as might be. The succeeding chapters, up to the 15th, deal with the different types of inflammation of the appendix, and numerous clinical histories are given as examples of the particular type under consideration. The remaining chapters deal with symptoms, difficulties and errors in diagnosis, treatment, expectant and operative, incomplete operations, and lastly, the after-treatment. The author still uses a 1-60 solution of carbolic acid to keep his instruments in after they have been sterilized in the usual manner.

The work has no doubt required a great deal of time and attention, but its perusal is rendered less pleasurable on account of the citations of so many clinical cases.

A COMPLETE EXPOSE OF EDDYISM OR CHRISTIAN SCIENCE, and the Plain Truths in Plain Terms Regarding Mary Baker G. Eddy, Founder of Christian Science. By Frederick W. Peabody, Member of the Boston Bar. Paper. Pp. 68. Price, $0.25.

This pamphlet, which is published by the author, is the most scathing exposé of Eddyism that we have seen, not only in the facts that it tells but in those it infers, and it would appear that if there were any possible chance for it the founder of this widespread cult might start a libel suit. As there has been no attempt at such it is a strong support of the correctness of the author's statements. Being an attorney Mr. Peabody undoubtedly knows just what chances he is taking in the matter. We believe that the general reading of this exposé by the profession would have a good effect. We have nowhere else seen such a thorough showing up of the fraud.

PROGRESSIVE MEDICINE, VOL. IV, 1901. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, Handsomely Bound in Cloth, 400 Pages. 13 Illustrations. Price, per annum, in Four Cloth-bound Volumes, $10.00. Philadelphia and New York: Lea Brothers & Co.

The December number of this serial contains valuable reviews from the literature on diseases of the digestive tract by Dr. Max Einhorn; on surgery and orthopedics, by Dr. J. C. Bloodgood; on renal disease, by Dr. J. R. Bradford, the only foreign contributor; on physiology, by A. P. Brubaker; on hygiene, by Dr. Henry B. Baker, and on practical therapeutic referendum, by E. Q. Thornton. The volume as a whole maintains the general character of excellence of the series and will be a useful addition to the physician's library.

LE MALATTIE DEL SANGUE. Manuale di Ematologia. Dottor Emilio Rebuschini. Un vol. di pag. viii-432. Milano: Ulrico Hoepli. 1902.

This little work is one of the latest issues of the Hoepli series reviewing the anatomy and physiology of the blood and its clinical examination and general pathology. Special attention is given to the subject of anemia, which takes up a large portion of the work. Other disorders included among blood diseases are certain parasitic disorders of the blood and

malaria which might hardly be expected to be thus included. Of course, the work is elementary, but anyone who reads Italian will find it a valuable little work of reference on its subject.

A TEXT-BOOK OF DISEASES OF WOMEN. By Charles B. Penrose, M.D., Ph.D., formerly Professor of Gynecology in the University of Pennsylvania. Fourth Edition, Revised. Cloth. Pp. 539. Price, $3.75 net. Philadelphia and London: W. B. Saunders & Co. 1901.

As the preceding editions of this work have been reviewed in these columns it is deemed unnecessary to say more of the present edition than that the author has brought it fully abreast of the times and that it therefore continues to hold its position as one of the most practical text-books on diseases of women in the English language.

## Married.

HENRY J. PARKER, M.D., of Clayton, Ill., to Miss Rhodes, of Moweaqua, February 5.

HUGO A. KIEFER, M.D., to Miss Alice B. Campbell, both of Los Angeles, Cal., February 10.

WILLIAM S. SHOUSE, M.D., to Miss Alice C. Duston, both of Kingston, Mo., January 30.

AUGUSTUS GUERTIN, M.D., to Miss Ludivinee Morin, both of Nashua, N. H., February 11.

JAMES H. CHIPMAN, M.D., to Miss Edna Manners, both of Georgetown, Del., February 8.

J. W. WYNN, M.D., to Miss Bertie Cunningham, both of Comanche, Texas, February 12.

CLARENCE S. RAMSEY, M.D., to Miss Della E. Wilson, both of Springfield, Ohio, February 11.

C. B. ALBRIGHT, M.D., Keene, N. H., to Miss Effie C. Booth, Rochester, N. Y., February 11.

CHARLES H. SCHOFF, M.D., of Media, Pa., to Miss Helen G. Duffee, of Chester, February 11.

GEORGE E. PENDER, M.D., to Miss Grace M. Sherwood, both of Portsmouth, N. H., at New York, February 9.

## Deaths and Obituaries.

**George A. Shurtleff, M.D.** Vermont Medical College, Woodstock, 1845, formerly professor of mental diseases and medical jurisprudence in the medical department of the University of California, president of the California State Medical Society in 1872, delegate to the International Medical Congress in 1876, member of the American Medico-Psychological Association and of the State Medical Society, who was for eighteen years medical superintendent of the State Insane Asylum at Stockton, died in that city, February 11, aged 82. He had retired from practice about nine years ago because of his failing health, and for the past five years had been an invalid.

**Joseph B. Holland, M.D.** Dartmouth Medical College, Hanover, N. H., 1866, and Columbia University, New York, 1867, died of muscular atrophy in Boston, Mass., February 14, aged 61. He had been a prominent citizen of Galesburg, Ill., since 1870, and, having retired from the practice of medicine because of his health, became a wholesale publisher of medical books.

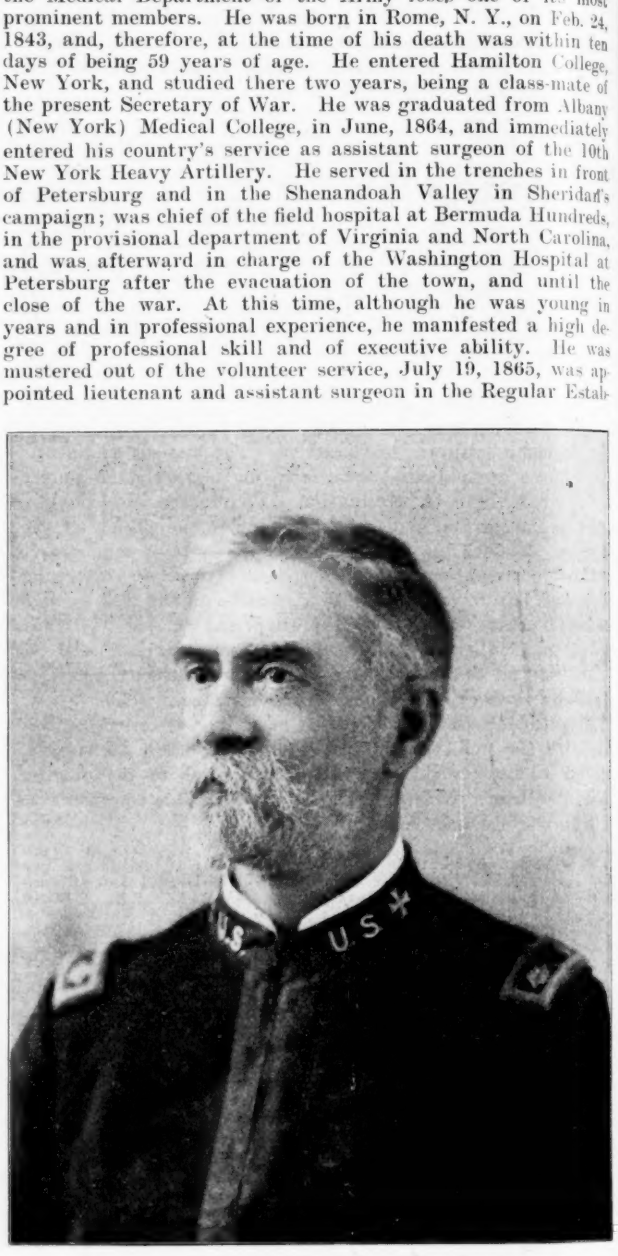
**Levi Cooper Lane, M.D.** Jefferson Medical College, Philadelphia, 1851; member of the Royal College of Surgeons, England; founder of the Cooper Medical College and of Lane Hospital, San Francisco; a member of the American Medical Association, died at his home in San Francisco, February 19, aged 70.

**William McKean, M.D.** Jefferson Medical College, Philadelphia, 1867, died of cancer of the liver and stomach, February 12, at his home in Canal Dover, Ohio, aged 64. He was a member of the Tuscarawas County Medical Society and of the Northeastern Ohio Medical Association.

**Dexter C. Holly, M.D.** University of Michigan, Ann Arbor, 1853, a prominent physician of that state, formerly president of the Grand Rapids Medical Society, who had retired from practice a few months ago, died at his home in Ann Arbor, February 13, of heart disease, aged 76.

### Benjamin Franklin Pope, M.D.

By the death of Colonel Pope, which occurred in Manila, February 14, and was noticed in the last issue of THE JOURNAL, the Medical Department of the Army loses one of its most prominent members. He was born in Rome, N. Y., on Feb. 24, 1843, and, therefore, at the time of his death was within ten days of being 59 years of age. He entered Hamilton College, New York, and studied there two years, being a class-mate of the present Secretary of War. He was graduated from Albany (New York) Medical College, in June, 1864, and immediately entered his country's service as assistant surgeon of the 10th New York Heavy Artillery. He served in the trenches in front of Petersburg and in the Shenandoah Valley in Sheridan's campaign; was chief of the field hospital at Bermuda Hundreds, in the provisional department of Virginia and North Carolina, and was afterward in charge of the Washington Hospital at Petersburg after the evacuation of the town, and until the close of the war. At this time, although he was young in years and in professional experience, he manifested a high degree of professional skill and of executive ability. He was mustered out of the volunteer service, July 19, 1865, was appointed lieutenant and assistant surgeon in the Regular Establishment, May 14, 1867; was made captain and assistant surgeon in 1869, and received his majority on Sept. 16, 1885. He was the first to notice and report the fungous growth resulting in "Madura foot" and reported a case in which he amputated the foot for this condition. To him also belongs the credit of establishing the circulating library for the army. At the outbreak of the Spanish-American war he was made Lieutenant-Colonel and Chief Surgeon of the 5th Army Corps, on May 9, 1898, and served throughout the war as chief surgeon under General Shafter, having entire medical charge of the Department of Santiago. He was mustered out of the volunteer service on Oct. 31, 1898, and on December 21 of the same year received his promotion to Lieutenant Colonel and Deputy Surgeon-General. On Jan. 1, 1902, he was made Colonel and Assistant Surgeon-General. Dr. Pope's chief contributions to medical literature were: "Trichinosis in the Army," 1884; "Mycetoma, the Fungous Foot of India," 1896, and "A Plan for the Organization of a Medical Department for War Service in a United States Volunteer Army," read before the Association of Military Surgeons of the United States in 1900.



BENJAMIN FRANKLIN POPE, M.D.

Oscar W. **Peck, M.D.** University of Vermont, Burlington, 1880, member of the Burlington Clinical and Vermont State Medical Societies, who had been state senator and Surgeon-General of Vermont, died, February 16, at Winooski, aged 47.

Jesse **Myer, M.D.** New York University, 1845, who had practiced medicine in Kingston, N. Y., since his graduation, died, February 16, at his home in that city, aged 80, from injuries received in a fall on an icy sidewalk.

Howard **Jennings, M.D.** Hospital College of Medicine, Louisville, Ky., 1886, of Savannah, Ga., died February 11, at El Paso, Texas, on his way home from Arizona, whither he had gone in pursuit of health.

Thomas **H. Smith, M.D.** Cincinnati Medical College, Ohio, 1855, died at his home in New Philadelphia, Ohio, February 19, after an illness of many months with heart disease, aged 78.

William **H. Clark, M.D.** New York University Medical College, 1882, of Bellingham, Mass., aged 55, was killed, February 15, by a train while he was driving across the track.

William **M. Ridenour, M.D.** Western Reserve University, Cleveland, Ohio, 1895, died of pulmonary tuberculosis at Las Cruces, N. M., recently.

N. J. **Newell, M.D.** Reform Medical College of Georgia, Macon, 1854, died at his home in Anderson, S. C., February 14, of heart disease.

Louis **Z. LaJoie, M.D.** Laval University, Quebec, 1894, died after a long illness, February 13, at his home in Haverhill, Mass., aged 34.

Joseph **H. Baker, M.D.** University of Pennsylvania, 1854, died of Bright's disease, February 12, at his home in Tarboro, N. C.

James **B. Crane, M.D.** South Carolina Medical College, Charleston, 1851, of Batesville, Ark., died suddenly about February 6.

John **T. Dooley, M.D.** New York University, 1888, died of pneumonia at his home in Manchester, Conn., February 15, aged 34.

Richard **C. Mackall, M.D.** University of Maryland, 1847, died at his home in Elkton, Md., February 16, of paralysis, aged 80.

John **P. McClanahan, M.D.** Jefferson Medical College, Philadelphia, 1854, died recently at his home in Alexis, Ill., aged 78.

Lyman **J. Adair, M.D.** Rush Medical College, Chicago, 1870, died February 14, at his home in Anamosa, Iowa, of pneumonia.

George **S. Glenn, M.D.** Bellevue Hospital Medical College, New York, 1874, of Morrilton, Ark., died February 9, aged 48.

P. **D. Flower, M.D.** University of Pennsylvania, 1869, died at his home in Albion, Pa., February 9, of apoplexy, aged 72.

## State Boards of Registration.

**Iowa State Examination.**—The Iowa State Board of Medical Examiners held quarterly examination for license, at Des Moines, January 21 and 22. The number of subjects examined in were 8; total number of questions, 80; percentage to pass, 75. There were 18 applicants, of whom 14 passed:

PASSED.

| Candidate. | Sch. of Pract. | College. | Year Grad. | Percent. |
|---|---|---|---|---|
| 487 | H. | Chicago Hom. Medical College | 1900 | 90 |
| 489 | H. | Chicago Hom. Medical College | 1900 | 85 |
| 490 | R. | College of Phys. & Surg., Chicago | 1901 | 83 |
| 491 | R. | Coll. of Phys. & Surg., Keokuk, Ia. | 1894 | 80 |
| 492 | R. | Coll. of Phys. & Surg., N. Y. City | 1894 | 90 |
| 493 | H. | Hom. Hospital Coll., Cleveland, O. | 1882 | 80 |
| 494 | R. | Illinois Medical College, Chicago | 1901 | 83 |
| 495 | R. | Kansas Medical College, Topeka | 1897 | 76 |
| 496 | R. | Northwestern U. Med. Sch., Chicago | 1900 | 84 |
| 497 | R. | N.-W. U. Woman's M. S., Chicago | 1901 | 86 |
| 499 | R. | N.-W. U. Woman's M. S., Chicago | 1889 | 87 |
| 501 | R. | Rush Medical College, Chicago | 1901 | 93 |
| 503 | R. | Trinity University, Toronto, Can. | 1898 | 92 |
| 504 | R. | Tufts Coll. M. S., Boston, Mass. | 1898 | 81 |

FAILED.

| | | | | |
|---|---|---|---|---|
| 488 | R. | Meharry Med. Coll., Nashville | 1895 | 63 |
| 498 | R. | Keokuk Medical College, Iowa | 1893 | 52 |
| 500 | R. | Missouri Med. Coll., St. Louis | 1874 | 66 |
| 502 | R. | St. Louis Coll. of Phys. & Surg. | 1901 | 74 |

**Indiana Examination.**—The Indiana State Board of Medical Registration and Examination held its regular semi-annual examination on January 14, 15 and 16, at Indianapolis. The number of subjects examined in were 18; number of questions, 130. The applicants numbered 39, of whom 32 were successful in obtaining the necessary 75 per cent.

PASSED.

| Candidate. | Sch. of Pract. | College. | Year Grad. | Percent. |
|---|---|---|---|---|
| 1 | R. | Jefferson Medical College | 1901 | 88 |
| 2 | R. | Medical College of Ohio | 1897 | 88 |
| 3 | R. | Medical College of Ohio | 1899 | 95 |
| 4 | R. | Univ. and Bellevue Hosp. Med. Col. | 1899 | 90 |
| 5 | R. | Chicago Medical College | 1891 | 82 |
| 6 | E. | Bennett Medical College | 1883 | 86 |
| 9 | E. | Bennett Medical College | 1901 | 83 |
| 7 | H. | Hahnemann Med. College, Chicago | 1898 | 90 |
| 8 | R. | Kentucky University | 1901 | 96 |
| 10 | R. | Rush Medical College | 1900 | 80 |
| 19 | R. | Rush Medical College | 1893 | 91 |
| 11 | R. | Louisville National Medical College | 1896 | 90 |
| 18 | R. | Louisville National Medical College | 1901 | 76 |
| 12 | R. | Kentucky School of Medicine | 1894 | 80 |
| 13 | R. | Harvard Medical College | 1887 | 94 |
| 14 | R. | Western Reserve, Cincinnati | 1877 | 75 |
| 22 | R. | Western Reserve, Cincinnati | 1898 | 77 |
| 15 | R. | Marion Sims Medical College | 1898 | 80 |
| 16 | R. | College of Phys. and Surg., Chicago | 1900 | 89 |
| 17 | H. | Kansas City Homeopathic Med. Coll. | 1900 | 80 |
| 20 | R. | College of Phys. and Surg., Keokuk | 1885 | 77[1] |
| 21 | R. | Woman's Medical Coll. of Penna. | 1900 | 95 |
| 28 | R. | Woman's Medical Coll. of Penna. | 1899 | 91 |
| 23 | R. | Illinois Medical College | 1901 | 92 |
| 24 | E. | Eclectic Med. Institute, Cincinnati | 1901 | 79[2] |
| 25 | R. | University of Michigan | 1901 | 92 |
| 26 | R. | Vanderbilt University | 1901 | 86[2] |
| 27 | R. | Miami Medical College | 1901 | 89 |
| 29 | R. | University of Pennsylvania | 1900 | 90 |
| 30 | R. | Barnes Medical College | 1899 | 91 |
| 31 | R. | Michigan College of Med. and Surg. | 1897 | 90 |
| 32 | R. | American Med. Missionary College | 1901 | 91 |

FAILED.

| | | | | |
|---|---|---|---|---|
| 1 | R. | University of Louisville | 1898 | 72 |
| 2 | R. | Missouri Medical College | 1878 | 64 |
| 3 | R. | Kentucky School of Medicine | 1901 | 66[2] |
| 4 | R. | Barnes Medical College | 1901 | 72[2] |
| 5 | R. | College of Phys. and Surg., Chicago | 1898 | 60[3] |
| 6 | E. | Eclectic Medical Inst., Cincinnati | 1901 | 71[3] |
| 7 | R. | Ohio Medical College | 1877 | 70[3] |

1. Conditionally.
2. Second examination.
3. Examination not completed.

**Wisconsin Examination.**—The Wisconsin Board of Medical Examiners held the regular quarterly examination at Milwaukee, January 14 and 15. The number of subjects examined in were 12; number of questions, 120; percentage required for pass, 75. The number of candidates examined was 19, of whom 16 were successful.

PASSED.

| Candidate. | Sch. of Pract. | College. | Year Grad. | Percent. |
|---|---|---|---|---|
| 1 | R. | Rush Medical College, Chicago | 1901 | 77 |
| 3 | R. | Rush Medical College Chicago | 1901 | 77 |
| 2 | R. | Northwestern University | 1900 | 86 |
| 7 | R. | Northwestern University | 1893 | 85 |
| 10 | R. | Northwestern University | 1901 | 80 |
| 11 | R. | Northwestern University | 1899 | 84 |
| 12 | R. | Northwestern University | 1901 | 85 |
| 14 | R. | Northwestern University | 1899 | 81 |
| 4 | H. | Hahnemann, Philadelphia, Pa | 1901 | 81 |
| 5 | H. | Hahnemann, Chicago | 1900 | 78 |
| 6 | O. | Northern Inst. of Osteopathy | 1901 | 81 |
| 8 | E. | Bennett Medical College, Chicago | 1898 | 86 |
| 9 | R. | College of Phys. and Surg., Chicago | 1900 | 80 |
| 13 | R. | Trinity Med. College, Toronto | 1891 | 83 |
| 15 | R. | Jefferson, Philadelphia, Pa | 1899 | 81 |
| 16 | R. | Columbia University | .... | 81 |

FAILED.

| | | | | |
|---|---|---|---|---|
| 17 | | Acad. Med. Kentucky | 1901 | 70 |
| 18 | | Harvey Med. Coll., Chicago | 1901 | 71 |
| 19 | | Certificate of Graduation unsatisfactory (probably fraudulent). He did not complete his examination. | | |

## New Instrument.

### A SUTURE HOLDER.

A. E. BENJAMIN, M.D.

MINNEAPOLIS.

All operators have found some inconvenience in the use of the forceps to hold sutures as they are introduced in abdominal wounds. A great many forceps are necessary if each suture is to be held at each end by a separate forceps. Much time is consumed in clamping and reclamping the forceps, on the part of the operator and his assistant.

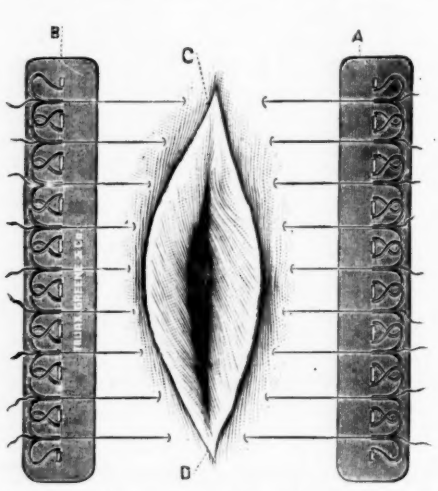
I have devised an instrument which may be used for all linear incisions when the sutures are introduced before they are tied. The above illustration represents the two suture holders, A and B, in operation. C and D represent the angles

of incision, and the sutures are shown as they pass out of the skin to the loops on the plates.

Each instrument consists of a plate of steel about four inches long, three-fourths of an inch wide, and one-eighth of an inch thick. Upon this plate are soldered loops of steel wire, placed in a manner so there is sufficient spring to retain the sutures, and as each successive suture is introduced, the operator and his assistant on their respective sides of the patient, quickly slip the ends of the sutures between the loops. These loops being soldered at an acute angle on the plate, and with an obtuse angle next to the wound, any pulling in the direction of the wound tightens the grasp of the loops upon the suture, making it impossible to get out of the grasp of the loop. Yet, when these sutures are to be tied successively, a little pull in the opposite direction and raising the suture at the same time, easily loosens it, so as to be tied.

The plates are placed at a sufficient distance from the edges of the wound, so that they do not interfere in any way with the introduction of the various sutures. The advantages claimed for this instrument are as follows:

1. The economy of time while the sutures are being introduced.




2. It holds the sutures separately, not allowing them to get mixed up or twisted.

3. It saves the unclamping and reclamping of forceps, which are often used to hold the ends of the sutures or avoids the use of many forceps to retain the individual sutures.

4. The operator himself, without loss of time, quickly shoves the end of the suture between the loops without having to loosen his hold upon it.

5. The two instruments may be raised after all the sutures are introduced to approximate the edges of the wound, showing at once any failure of an individual suture to approximate the opposing surfaces, and this suture can be quickly identified, removed and reintroduced properly.

I have been using these suture holders in nearly all my abdominal operations for the past six months, and have found them a great convenience and saver of time in this work.

302 Pillsbury Bldg.

## Miscellany.

**Diagnosis of Insufficiency of the Pylorus.**—THE JOURNAL has mentioned Queirolo's method of determining the outlines of the stomach. A small rubber balloon is fastened on the end of a sound which branches above. One branch connects with a Marey drum, the other has a faucet to shut off the air. After the balloon is partially inflated and communication with the outer air is closed by the faucet, percussion over the stomach causes the index to vibrate at the slightest touch, while it does not move when the percussion passes beyond the limits of the stomach. It is possible by this means to locate the outlines of the stomach with extreme accuracy if the pylorus is normal. In case of insufficiency of the pylorus, on the other hand, the air escaping through the pylorus deprives the stomach of the conditions necessary to enable the effect of the percussion to be transmitted from the stomach walls to the balloon and in turn to the index. Hence the index does not stir in case of insufficiency of the pylorus, even when the percussion is applied directly over the stomach. The insufficiency may be intermittent or total. In some cases the index moves at certain times and is immovable at others, thus allowing the complete supervision of the behavior of the pylorus under varying conditions. Queirolo stated in his communication on the subject at the recent Italian Congress of Internal Medicine, that these tests fail only in obese subjects or when there is an excessive tendency to borborygmus on the slightest occasion.

**The Bibliographia Medica.**—Professor Richet, one of the editors of the *Bibliographia Medica*, remarked in a recent editorial in his *Revue Scientifique*: "Americans appreciate the advantages of organized classification of contemporaneous medical bibliography better than Europeans. Almost all the subscribers to the *Bibliographia Medica* are in America, principally in the admirable libraries of American Universities. The Germans, Russians, Italians and even the French, have been strangely indifferent." He continues, "If even one-half of the university libraries in the world would subscribe to the *Bibliographia Medica*, the work could go on, as it is not published for profit." It is a strictly international undertaking, and if German and American works are in the majority in the index, it is merely because the medical output is larger in Germany and the United States than in other countries. The Newberry Library of Chicago wrote to urge the continuance of the work "at any price," gladly agreeing to pay any subscription that might be asked.

**Subarachnoid Serum Treatment of Tetanus.**—Professor Penna, of Buenos Ayres, is convinced that tetanus is essentially an affection of the spinal cord rather than of the brain. For this reason he injects the antitetanus serum into the subarachnoid cavity and reports in the *Semana Medica* of October 31, five patients thus treated. The amount of Pasteur antitetanus serum varied from 30 to 40 c.c., so that the different patients received a total of from 100 to 240 c.c. All were severe cases of traumatic tetanus. Three patients recovered under daily injections of the serum with a slow, regular subsidence of the symptoms in three to seven days. The other two patients died of an intercurrent pneumonia, but the tetanic symptoms had already subsided, the limbs were relaxed and voluntary movements were possible. As much as 60 c.c. were injected once in a peculiarly severe case. Penna had previously tried antidiphtheria serum in subarachnoid injections, but found that the course of the tetanus was not affected unless possibly the disease was aggravated. He always withdraws an approximately corresponding amount of cerebrospinal fluid, and no inconveniences were ever noted from this technique.

**Gersuny's Treatment of Furuncles and Carbuncles.**—Instead of waiting for an abscess to ripen, Gersuny incises at once and drains with a tube or rubber tissue, after scraping out the necrotic substance. This prevents the spread of particles to induce further abscess formation. He treats a carbuncle on the same principle, as he believes that the tension of the skin above forces the contents of the abscess out into the surrounding tissues, thus favoring the spread of the infection. He is careful to avoid making a large hole, which takes long to heal, but makes his incisions like the spokes of a wheel, leaving the center intact. He curettes through each one of the incisions and keeps them open with iodoform or dermatol gauze at first and later with rubber tissue. The lesion heals usually in a week.

**The Physician in Politics.**—As a matter of fact, the doctor is under a greater obligation to actively interest himself in matters pertaining to local government, public education and other civic service than almost any other citizen in his community. His obligation is greater because of his fitness for responsibility through education, high ideals of character and the close relationship he sustains to the families and homes of the community in which he lives. He can not be a successful

practitioner without some measure of scholarly attainment. A physician's knowledge is rarely confined to pathology and therapeutics. He has been in the college atmosphere. He has a taste for books and a desire to explore the wide fields of scientific investigation. He is generally a man of liberal culture and refined instincts. His profession also gives him wide knowledge of men. Such a man is needed in the responsible civic positions in every city and town. Public service of this character need not carry with it any loss of professional prestige or any sacrifice of personal interest. It is true that the doctors are drafted for school boards and other positions closely related to educational affairs in many towns, serving in such capacities with great credit to the profession and great profit to the schools. But the doctor is needed in larger fields of civic usefulness. It is an obligation he should not be permitted to escape.—*Record-Herald* (Chicago), February 16.

**Experimental Spinal Cocainization.**—Experiments on dogs and frogs are described in the Russian *Med. Obos.* for August, which show that a solution of cocain injected into the lumbar subarachnoid space is more liable to reach the medulla oblongata the larger the amount of fluid injected, and the more the head is lowered. It penetrates into the gray matter by diffusion, by osmosis and also by the lymphatics. The analgesia is more profound than in morphin-chloroform narcosis. The terminals of the nerves feel the analgesia more than the trunks. The intestinal peristalsis is very much diminished and the abdominal organs become anemic. If the animal is suffocated after it is cocainized, the clinical picture of the asphyxia is much less pronounced than usual, which suggests that the conducting power of the spinal cord is paralyzed or much diminished. The arterial and venous blood pressure was increased, the pulse rising from 68 to 108. The blood pressure increases with the smallest amount of cocain injected into the blood. Halbreich deduces the practical conclusions from his research that: the amount of fluid should be restricted to 1 c.c.; that the injection should be made very slowly, and persons with short bodies, especially children, should be excluded from spinal cocainization on account of the danger that the fluid may reach the medulla oblongata. Weak heart action is not a contra-indication and repeated injections at brief intervals are well tolerated.

## Societies.

### COMING MEETINGS.

Medical Association of the Missouri Valley, Lincoln, Neb., March 20, 1902.
Medical Association of the District of Columbia, Washington, April 1, 1902.
Tri-State Medical Society of Iowa, Illinois and Missouri, Chicago, April 3-4, 1902.
Tennessee State Medical Society, Memphis, April 8, 1902.
Florida Medical Association, Tampa, April 9, 1902.
Western Ophthalmological and Oto-Laryngological Association, Chicago, April 10-12, 1902.
Medical Association of the State of Alabama, Birmingham, April 15, 1902.
Medical Society of the State of California, San Francisco, April 15-17, 1902.
Medical Association of Georgia, Savannah, April 16, 1902.
Mississippi State Medical Association, Jackson, April 16, 1902.
South Carolina Medical Association, Spartanburg, April 16-17, 1902.
Medical and Chirurgical Faculty of Maryland, Baltimore, April 22, 1902.
Association of American Physicians, Washington, D. C., April 29-30, 1902.
American Association of Genito-Urinary Surgeons, Atlantic City, N. J., April 30, 1902.

**Rock Island County (Ill.) Medical Society.**—This is the name of the new society incorporated February 7.

**Chehalis County (Wash.) Medical Society.**—This is the name of a new society recently organized at Aberdeen, with Dr. George W. Overmeyer as president and Dr. J. William Scamell, secretary.

**Pasadena (Cal.) Medical Society.**—The annual election, February 12, resulted in the election of Dr. Henry H. Sherk, president; Dr. Stanley P. Black, vice-president; Dr. John E. Janes, secretary and treasurer.

**Shelby County (Tenn.) Medical Society.**—This new organization was formed at Memphis, February 12, with temporary officers and will be the local society affiliated with the American Medical Association.

**Redlands (Cal.) Medical Society.**—This Society elected the following officers in January: President, Dr. Charles C. Browning, of Highland; vice-president, Dr. Gayle G. Moseley; secretary and treasurer, Dr. J. E. Payton.

**Bay County (Mich.) Medical Society.**—The annual meeting in Bay City, February 10, elected Dr. Virgil L. Tupper, president; Dr. Everett A. Hoyt, vice-president; Dr. Morton Gallagher, secretary; Dr. Charles H. Baker, treasurer.

**St. Joseph County (Ind.) Medical Society.**—The annual election, January 27, resulted as follows: President, Dr. William G. Wegner; vice-president, Dr. James H. Cannon; secretary, Dr. Harry F. Mitchell; treasurer, Dr. Charles M. Butterworth.

**Platte County (Neb.) Medical Society.**—This new Society elected the following officers, February 14: Dr. H. J. Arnold, Columbus, president; Dr. J. C. McKinley, Humphrey, vice-president; Dr. Berthold C. Tiesing, Columbus, secretary; Dr. H. A. Hansen, Columbus, treasurer.

**New York Neurological Society.**—The following officers have been elected for the ensuing year: President, Dr. Joseph Collins; vice-presidents, Drs. J. Arthur Booth and Frederick Peterson; recording secretary, Dr. Joseph Fraenkel; corresponding secretary, Dr. Frank Hallock; treasurer, Dr. Graeme M. Hammond.

**Fox River Valley (Wis.) Medical Association.**—At Green Bay, January 21, these officers were elected: President, Dr. Charles D. Boyd, of Kaukauna; vice-presidents, Drs. Daniel W. Harrington and Bertha V. Thomson, of Oshkosh; secretary and treasurer, Dr. James S. Reeve, of Appleton; censor, Dr. Theodore J. Redelings, of Marinette.

**Kendall County (Ill.) Medical Society.**—This new organization was formed, February 11, at Yorkville under the guidance of Dr. Edmund W. Weis, of Ottawa, secretary of the State Society. The following officers were elected: Dr. Julius A. Freeman, Millington, president; Dr. William M. Hanna, Lisbon, vice-president; Dr. Robert A. McClelland, Yorkville, secretary.

**Randolph County (Ind.) Medical Association.**—The meeting of this Society in January resulted in the election at Winchester of Dr. Forrest A. Chenoweth, president; Dr. Clifton M. Kelley, vice-president; Dr. W. O. Hinshaw, of Lynn, secretary; Dr. John T. Chenoweth, treasurer; Dr. James S. Blair, of Lynn, Dr. Joseph J. Evans, Dr. William Commons, Union City, censors.

**Eastern Ohio Medical Society.**—At Steubenville, January 23, this Society elected as president, Dr. Arthur B. Holland, Wellsville; vice-presidents, Dr. Joseph J. McCoy, Steubenville; Dr. William L. England, Jewett; Dr. Brady O. Williams, Martin's Ferry; Dr. William M. Calhoun, East Liverpool; secretary, Joseph F. Purviance, Steubenville; corresponding secretary and treasurer, Dr. James C. M. Floyd, Steubenville.

**Ramsey County (Minn.) Medical Society.**—At the annual election and banquet, January 27, this Society elected Dr. John L. Rothrock, president; Dr. Angus Macdonald, vice-president; Dr. Ethelbert F. Geer, secretary; Dr. Frederick Leavitt, treasurer; Dr. Alvah F. Whitman, necrologist. The *St. Paul Medical Journal*, owned by the Society, was reported to be a profitable enterprise. The editor, Dr. Burnside Foster, and business manager, Dr. H. L. Taylor, were warmly praised for their excellent management and for the high class of the journal.

## NEW YORK COUNTY MEDICAL ASSOCIATION.

*Stated Meeting, held Jan. 20, 1902.*

The President, Dr. Parker Syms, in the Chair.

### Primary Sarcoma of the Pancreas.

DR. EDWARD SCHNAPER presented a primary sarcoma of the tail of the pancreas, taken from a woman of 53, who had been operated on by Dr. M. S. Kakels under the belief that he was dealing with a tumor of the left kidney. The tumor was inoperable. It was large and soft, and presented firm nodules on its surface, which, on microscopic examination, proved to be lymph nodes that had been incorporated in its growth. The left kidney and spleen were not involved in the neoplasm. It was worthy of note that although the pancreatic tissue was

almost completely destroyed, repeated examinations of the urine failed to show any sugar.

DR. M. S. KAKELS said that it was exceedingly difficult to make a diagnosis of a tumor of the pancreas unless the growth were palpable. This woman had been sick about six months, and he had done an exploratory laparotomy in the expectation of finding a sarcoma of the kidney. He had been able to find in the literature only 20 tumors of the body, and 4 of the tail of the pancreas.

### Diabetes Mellitus.

DR. C. E. NAMMACK opened a symposium on diabetes with this paper. With regard to the diagnosis, he said that even a change from blue to green in the copper-test solution called for further investigation. By repeated filtration through animal charcoal one could remove the other substances likely to reduce the copper, and leave the sugar alone in solution. The combination of chronic gastritis, alcoholism and chronic hepatitis furnished by far the largest number of cases of non-diabetic glycosuria. When the function of sugar assimilation was depressed the sugar taken as food would appear temporarily in the urine. The majority of cases of transient glycosuria presented no other symptom than the presence of sugar in the urine. It was merely a perversion of function yielding readily to treatment, and not accompanied by severe symptoms. It was very different from true diabetes. Under the influence of diabetes the tissues melt down, emaciation develops, and life is often terminated in a coma which is the result of a true auto-intoxication. True diabetes was a frequent disease in this city, and it appeared to be on the increase as a result of our strenuous life. Out of 202 deaths occurring in the boroughs of Manhattan and the Bronx, 54 were in Jews and 51 in people of Irish nativity or parentage, but his personal experience did not bear out the idea of the compiler of these statistics, that this disease was common in these races because of their breeding in and in. Grief, fright, joy and anger or anxiety, if protracted, exerted a marked influence. The association of insanity with diabetes was so marked as to be more than a mere coincidence. Gouty glycosuria was more or less persistent, and was liable to pass into the graver condition of diabetes mellitus. Diabetes mellitus was of frequent occurrence in obese individuals, and this form was more amenable to treatment than that variety associated with emaciation. Much had been written about pancreatic diabetes, but this disease occurred without injury to the pancreas, and extensive disease of that viscus might occur without diabetes. The perverted metabolism theory supposed an inability on the part of the muscles and glands to appropriate the sugar brought to them by the blood. It was improbable that all cases of diabetes were dependent upon a single cause—indeed, it was probable that diabetes mellitus was a disease of nutrition, sometimes acute, but generally chronic, characterized by the presence of dextrose in the urine, by polyuria and by a progressive loss of flesh and strength.

### Surgical Aspect of Diabetes.

DR. ARPAD G. GERSTER read this paper. He called attention to the observation of Dr. Theobald Smith, that pyogenic bacteria thrive best in media containing between .2 and .5 per cent. of sugar, or that percentage found in the blood of diabetics. The products of faulty assimilation circulating in the blood of the diabetic caused a lowering of the vitality of the tissues, and led to a condition similar to premature senility. For this reason the tissues were especially vulnerable to the onslaught of microbes. It was well known that in a minority of persons wounds of all kinds show a tendency to suppurate, and it was possible that in such persons there was a latent diabetes, or at least a condition of the system which would finally lead to diabetes. Furunculosis and carbuncle were relatively common in diabetics, more particularly in persons of middle age having glycosuria. The favorite location for carbuncle was on the dorsum, and he had seen one case in which one enormous carbuncle extended from the occiput to the sacrum. The treatment should consist in early, free multiple incisions. Slight traumatisms in diabetics often gave rise to gangrene. The treatment should consist in measures for improving the circulation of the part. Perforating ulcer, occurring in a diabetic, showed a special tendency to lymphangitis and phlegmonous inflammation. The non-infectious form of gangrene arose from the existing arteriosclerosis. An evanescent limping, or a peculiar painful sensation or numbness coming on after remaining quiet for a short time, should be looked upon as the precursor of gangrene. Gangrene of the extremities was about four times more frequent in men than in women. The mortality was about 50 per cent., death often occurring in coma. In the non-infectious cases of gangrene without fever, the part affected should be kept dry and elevated, and when the line of demarcation had formed no operation should be done without stringent necessity. The point at which to do an amputation must be determined by the amount of arteriosclerosis present. In the infectious cases, it was often necessary in order to avoid contact infection, to perform a high amputation. In operating on such cases there was danger both from the anesthetic and from the occurrence of diabetic coma. The operation should be done in the morning, so that there need not be too much fasting beforehand, and before and after the anesthesia the patient should receive 2 drams of bicarbonate of soda and 10 grains of bicarbonate of potassium. In amputations, it was better to use short flaps and keep an open wound, avoiding sutures.

### Diabetic Affections of the Eye.

DR. S. BUSBY ALLEN said that one of the early symptoms of diabetes affecting the eyes was a partial paralysis of the ocular muscles, most commonly of those innervated by the third nerve. These paralyses bore no constant relation to the gravity of the disease. Paresis of accommodation usually occurred early, and if rapidly progressive in a person under 35, was strongly suggestive of glycosuria. A cataract in a young person, ripening within a few weeks, and appearing in both eyes was almost certainly of diabetic origin, but in older persons a diabetic cataract presented no characteristic features. Diabetic retinitis closely resembled the retinitis of Bright's disease. It occurred early and was one of the causes of diabetic amblyopia. This form of amblyopia was in all respects like the amblyopia of tobacco or alcohol, and was often an indication of impending diabetic coma.

### Prognosis and Treatment of Diabetes.

DR. ABRAHAM MAYER said the favorable symptoms were: 1, advanced age at the commencement of the disease; 2, long duration of the disease without serious complications or marked emaciation; 3, traumatic or syphilitic origin; 4, absence of the disease in other members of the family; 5, association with obesity, or with gout or the uric acid diathesis; 6, a mild glycosuria along with a fair tolerance for carbohydrates; 7, rapid excretion of sugar with increasing tolerance for the carbohydrates; 8, conditions of life favorable to proper dietetic and hygienic management, and 9, the development of the disease about the time of the menopause. The unfavorable symptoms were: 1, development early in life; 2, early loss of flesh and strength; 3, severe gastro-intestinal symptoms; 4, diabetic gangrene; 5, presence of diabetes in other members of the family; 6, the occurrence of phthisis as a complication, particularly if associated with a cessation of the glycosuria; 7, a large excretion of acetone and an increase of ammonia; 8, unfavorable conditions of life, and 9, the coexistence of organic disease of the pancreas. In the treatment, our chief aim should be to increase the power of the system to assimilate carbohydrates, and it should be ever kept in mind that no method of treatment which excluded dietetic management was of any avail. Fortunately a diabetic dietary could now be made varied and palatable. The patient should at first be placed upon a standard rigid diet, composed of albumin, fats and a very little alcohol. If the type of the disease were mild, the patient would become sugar-free in a few days, but in the more severe forms it might be necessary to also reduce the nitrogenous elements of the food. When a diabetic continued to excrete sugar for some time his tolerance for carbohydrates diminished, and conversely, when a diabetic was kept sugar-free for a considerable time by a strict regimen his tolerance for carbohydrates increased very

materially. Diabetics usually suffered most from the exclusion of bread from the dietary, and he had found that walnuts could often be advantageously substituted. The diabetic should be warmly clad, and, while taking open-air exercise, should have an abundance of rest for both mind and body. Opium and its alkaloids allay the nervous irritability and improve assimilation. Half a grain should be given as the initial dose, three times a day after meals, and should be cautiously increased, its constipating effect being counteracted by the administration of rhubarb or cascara. The speaker said that he had had the honor some years ago to advance the bacterial theory of diabetes, and in accordance with that view he had treated suitable cases with the bichlorid of mercury. This had given him better and more lasting results than any other medicinal treatment.

DR. J. C. BIERWIRTH, Brooklyn, said that, according to his experience, there were many cases of glycosuria in which there was no increase in the quantity of urine and no augmentation of the specific gravity. For example, he had just seen a case in which only 57 ounces of urine were voided daily, and the specific gravity of this urine was only 1018, though it contained 3 per cent. of sugar. The importance of recognizing this fact was obvious when one recalled that very many physicians are in the habit of omitting to test for sugar if the specific gravity of the urine is not over 1020. He was not quite so sanguine as Dr. Mayer regarding the results of treatment in diabetes. When thirst, polyuria and beta-oxybutyric acid were present, the physician could do very little, but in the earlier stages he could accomplish a great deal.

DR. JAMES J. WALSH thought it not improbable that in the future we would have to admit the contagiousness of diabetes. The general practitioner could hardly be expected to examine the urine of every patient, but when a young man complained of soreness of the gums, of fatigue on slight exertion, or of loss of sexual power, the urine should certainly be examined for sugar.

DR. N. E. BRILL pointed out that Dr. E. Libman, of New York, had discovered that when the percentage of sugar in culture media was the same as in the blood of diabetics the bacteria grown on such media immediately precipitated the peptones. This raised the question as to whether such a precipitation of peptones might not possibly explain the frequent occurrence of thrombosis and furunculosis. He declared that Dr. Mayer's views regarding the action of bactericides in diabetes were purely speculative, and had never been substantiated by pathologic research. Bichlorid of mercury was certainly sometimes beneficial in diabetes, but only, according to his own experience, in syphilitic cases.

DR. ALEXANDER LAMBERT remarked that as peptone was only found in the portal vein, the theory of the precipitation of peptones might well be characterized as fanciful.

DR. MAYER, in closing, said that he had found both husband and wife diabetic in nearly 8 per cent. of the cases he had investigated, and he was a firm believer in both the contagiousness and infectiousness of diabetes.

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## CALIFORNIA ACADEMY OF MEDICINE.

*Regular Meeting, held Jan. 28, 1902.*

### Myositis Syphilitica.

DR. D. W. MONTGOMERY reported this case and presented the patient, who was a man aged 30 years with a history of venereal sores three months previously. He came under the author's care July 26, 1901, when he was suffering with a roseola and general adenopathy. In August a painful tender swelling of the left sterno-cleido-mastoid muscle throughout its course occurred with some interference with function, causing stiff neck. The swelling of the muscle was most marked in the middle third of its course, causing a decided bulging of the side of the neck. This subsided, but reappeared to a less extent five months later, December, 1901. On Dec. 13, 1901, there was density of the muscle in its middle third, but extending up and down almost its entire length, pain only where the muscle was put on the stretch, and a little tenderness. There was a packet of enlarged lymphatic nodules both in front and behind the muscles and extending beneath it at the point where the muscle was most affected. The patient also complained of pains in the left shoulder and in the left elbow, and consequent lack of strength in the whole left upper extremity, with pains in both ankles and both knees. On the cutaneous surface there was a well-marked papulo-crusted syphilid. The patient was given 10-grain doses of potassium iodid, associated with 30-drop doses of fluid extract of senna to overcome a coincident constipation. He was also directed to rub mercurial ointment into the skin over the affected muscle. On Jan. 28, the affection of the sterno-cleido-mastoid muscle had improved, but the swelling of the lymphatic nodules was more pronounced. There was so much pain in the bends of both elbows that he could not completely extend either arm, and there was pain in the left knee. The papulo-crusted syphilid was still present.

### Primary Luetic Sore on Lower Lip.

DR. HOWARD MORROW reported a case and presented the patient, a young woman. The sore was of five weeks' duration and began as a fissure, later becoming nodular. There was enlargement of the neighboring lymphatic glands. Under treatment the swelling was rapidly decreasing.

### Hepatic Abscess.

DR. F. B. CARPENTER presented the liver of a woman 35 years of age, who had lived in Mexico for the past two years. Reported well until six months ago when she was taken sick with chills and fever and said to have had malaria. This condition continued until she came to San Francisco about one month ago. Patient was confined to her bed at the time and profoundly jaundiced, appetite gone, bowels constipated and patient had lost in weight from 80 to 120 pounds. There was a history of tumor having been present about three weeks before in the region of the gall-bladder. Tumor suddenly disappeared, and was followed by a discharge of blood and pus from the rectum. Examination showed lower border of the liver to be about three inches below the costal margin and somewhat tender to the touch. Pain had been continuous but never spasmodic; patient had acquired the morphin habit to a slight degree. There was no history of diarrhea at any time and but slight vomiting; sweating had been more or less persistent from the beginning. Leucocyte count showed 35,000; no ameba was found in intestinal discharge. The abdominal veins were well defined. The diagnosis lay between empyema of the gall-bladder and hepatic abscess with rupture into the intestinal tract. Operation showed that an abscess the size of two fists existed in the right lobe of the liver, that the under surface of the abscess cavity was formed by the coherent stomach and colon. The cavity was filled with a thick, stringy and dark-colored pus containing blood, broken-down liver substance and evidently some mucus. Autopsy on the fourth day showed that the adherent stomach was in direct communication with the abscess through a perforation in its posterior wall. The gall-bladder was contracted, thickened to about one-half inch, and its cavity and duct nearly obliterated. The case was thought to be one of tropical abscess, though a hasty pathologic examination by Dr. Philip King Brown had developed no evidence of ameba in any portion of the abscess walls, though it was most likely that that was its original cause. The entire liver was studded with abscesses of all sizes, from a pinhead to a marble.

### The Species of Blister Beetles Inhabiting the United States.

DR. F. E. BLAISDELL exhibited and called attention to a collection of blister beetles that were indigenous to the United States. They were of special interest to the physician on account of the cantharidin which they contained, and the vesicating power which they possessed, which was utilized as a counter-irritant and also as an internal remedy in several diseases. To the entomologist they were of interest because of the phenomena of hypermetamorphosis that they presented during their development. These coleopterous insects belonged to the family meloidæ, which comprised 26 genera and about 191 species. Out of the 47 species of the genus cantharis found in our fauna, 29 are found in the State of California. There was only one officinal species, the cantharis vesicatoria. It was found

in southern Europe about the Mediterranean, and in the southern provinces of Russia, those from the latter being the most esteemed. A fact of interest was, that all of the American species tested had proved as efficient as their European relative. The cantharidin was found to be more abundant in the soft parts of the insects than in the hard exoskeletal parts. To test the efficiency of a given species, the insects were collected and killed by either exposure to the steam of hot vinegar or the fumes of chloroform, drying them in a warm room. They were then either simply powdered and made into a paste and applied to the skin, or by throwing the powder into chloroform and after a time filtering or straining off the fluid and allowing evaporation to take place spontaneously, the cantharidin would then be found deposited. In 500 parts of the Chinese blister beetle, or mylabris cichorii, had been found 2.13 parts of cantharidin. According to our present classification cantharis cinerea of the dispensatory was known as *macrobasis unicolor*, and was found from Canada to Kansas, Georgia and Arizona; cantharis marginata as *epicanta cinerea*, found in the Middle States; Cantharis atrata as *epicanta pennsylvanica*, found in the Middle States to Texas; cantharis albida, as *macrobasis albida*, found abundantly in Texas. Some species were very abundant. Cantharis Nuttalli had been found on the plains of Missouri so abundantly as to be swept up by bushels; cantharis vulnerata of southern California was also found in great abundance.

### Election of Officers.

The following officers were elected for the ensuing year: Dr. D. W. Montgomery, president; Dr. H. M. Sherman, vice-president; Dr. L. A. Kengla, secretary; Dr. H. Kreutzmann, treasurer.

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## CHICAGO NEUROLOGICAL SOCIETY.

*Regular Meeting, held Dec. 19, 1901.*

Dr. Hugh T. Patrick, in the Chair.

### Description of Curves Representing the Areas of White and Gray Matter in Human Spinal Cord at Level of Each Spinal Nerve.

DR. H. H. DONALDSON gave the description of a new chart drawn by Mr. Davis to represent the areas of the gray and white matter in the human spinal cord at the level of such spinal nerve. The base line represents the average length of the adult cord, and is divided into thirty-one parts, each having the length of the corresponding segment. The data for the areas of the cross-sections were taken from Stilling's tables. The new features in this chart are the division of the base line into lengths equal to those of the corresponding segments, and the use, for the areas of the cross-sections, of data derived from the measurement of the adult cord. The diagram at present found in the text-books is based on Stilling's measurements of the cord of a 5-year-old child, while the base line is divided into equal intervals for the segments, thus failing to give the measurements for the adult cord, and disturbing the relations of the curve which is presented.

### Number and Size of Spinal Ganglion Cells and Dorsal Root Fibers in White Rats of Different Ages.

DR. DONALDSON next presented some results obtained by Mr. Hatai from his studies on the spinal ganglion of the white rat during the growing period. Four rats were used, their body weights being 10, 24, 63 and 167 grams respectively. In each rat the number of cells in the ganglion and the number of fibers in the dorsal nerve roots of the sixth cranial, fourth thoracic, and second lumbar was determined. On comparing these numbers thus obtained, it was possible to draw the following conclusions: 1. In the spinal ganglia the number of cell bodies is constant between birth and maturity. There is, of course, some individual variation in this number. 2. The fibers of the dorsal nerve roots are more than twice as numerous in the 167-gram rat as in the 10-gram rat, and the intermediate weights show intermediate numbers in the roots. 3. Since this is the case, it follows that the ratio between the number of cells in the ganglia, as compared with the number of fibers in the dorsal nerve roots, steadily decreases. In the youngest stage, there may be as many as eleven cells in the ganglion for each fiber in the dorsal nerve root, while in the case of the most developed nerve there are still 2.7 cells for each fiber.

It appears that the new fibers are formed by the outgrowths of cells present in the ganglion from the earliest stage. Studies on the general activity of the rat show that they are most active when weighing from 25 to 35 grams, and therefore at a time when the number of fibers in the dorsal nerve roots is still very incomplete.

DR. HUGH T. PATRICK inquired, in discussion, whether a piece of foil cut out to correspond to the gray matter was used as the basis of measurement.

DR. H. H. DONALDSON said that the section was first enlarged about four times, the outline then drawn on tracing paper, which is placed over the foil, which is cut in accordance with the figure. From that figure the calculation is made. The foil used for this purpose must be of uniform thickness, so that the measurements will be accurate. The foil is sold in strips, and as the ends of the strip are much thinner than the middle piece, only the latter is used. These strips are all weighed so that they will correspond to the standard. The measurements can also be made with cardboard.

DR. HUGH T. PATRICK thought that this subject was of some practical importance in some of the degenerate diseases, especially cerebellar ataxia, in which the central nervous system has been found very small. He could not recollect any statement bearing on the small amount of white or gray matter, but simply recalled mention of the small size of the brain, the cerebellum, pons, medulla and cord. In one case, measurements of the cord were given in different diameters. He was of the opinion that in connection with some of the congenital diseases these comparative measurements might be of considerable interest.

DR. L. F. BARKER inquired as to the kinds of reproductions in Stilling's "Atlas."

DR. H. H. DONALDSON said they were lithographs, and were probably pretty accurate. The cross-sections of the cord were placed in cells filled with alcohol. The observations were made while the specimens were in a good state of preservation, before the alcohol had shrunken them.

DR. H. H. DONALDSON read a paper entitled

### A Study of the Cells and Fibers in Different Segments of the Spinal Cord.

DR. L. F. BARKER regretted that Dr. Donaldson did not divulge his opinions based on the results of this work. Naturally a great many questions arise in connection with this work. He was especially interested in getting an explanation of the reason for the increase in the number of fibers. Three possible explanations suggest themselves. One, the growing-out of more fibers from the cells in the ganglion to the cord, probably the most likely explanation. The second possibility would be a division of single fibers already present, and the third an outgrowth of fibers from the cord to the ganglion, although that might be the least plausible.

The second point was the disappearance of so many of the small cells, the increase in the large cells, which apparently was due to the development of the small cells. Nevertheless, there are in all cases a large number of small cells left undeveloped. He said he would like to know whether these were surplus cells that never attained to maturity, remaining small cells without any processes, or whether they possibly can be cells which send out axis cylinders to end in cell bodies of other neurons. If they remain immature, it would be in accord with what is believed to occur elsewhere in the nervous system, namely, that in all parts of the nervous system, as in most parts of the body, there are cells left in an immature state capable of further development under certain circumstances. If that is the case, there are as many reserve cells in the ganglia as there are cells in the commission. That would be a very large excess in proportion to reserve cells, but if it is remembered that as in the substantia gelatinosa many cells develop and degenerate, as many as attain maturity, the excess would not seem so great. He also asked for the reason of the increase in the ratio of fibers to

cells, especially in the cervical region. Naturally the first thing to which attention would be directed is the possibility of the enormous development of the hand as a sense organ as compared with the thoracic region, and the lower extremity as a sense organ. He did not know whether in the rat the hand was more of a sense organ than the foot. In the human we might naturally expect a greater number of root fibers in the cervical roots than in the thoracic or lumbar. The hand area in the cerebral cortex is very large compared with the trunk or foot area. Another point, that this change in proportion takes place during the point of greatest activity of the animal, is extremely interesting, and suggests the possibility of a relationship between activity and development. It is a well-known fact that the exposure to strong light of prematurely born cats increases the rapidity of development of the myelin sheath. Why could it not be possible that the further activity should determine this rapid change in the ratio of fibers to cells? He hoped that Dr. Donaldson would explain these points.

DR. DONALDSON said that we might account for the increase in the number of fibers in the dorsal nerve root by assuming that the new dorsal root fibers grow out from cells which entered into commission in the later stage of the ganglion, being immature in the early stage. That explanation receives its best support from the relation in the cervical region between the large cells and the number of fibers. In the dorsal nerve root the number of large cells is equal to the number of nerve fibers. The division of fibers does not appear so probable in the sense in which it would have to take place, although many of the fibers are divided. These divided fibers all pass to the periphery, but such a division has always been observed at a stated place, the dividing branches being of equal length and equal growth, and not simply representing a series of twigs which might run out and thus add to the number of fibers. If these run out together, they would be counted at the same time, and would not account for the change in the condition in this period and some period where there were more dorsal nerve roots. All the evidence tends to point toward the throwing into commission of new cells for the addition of new fibers to the dorsal nerve root.

The question as to the excessive number of cells in the spinal ganglia, he deemed difficult to answer. One author found most of the nerve cells in the spinal ganglia to be of this type (indicating). There were a few cells, the axones of which ended within the limits of the spinal ganglion itself. These, however, are few in number, and can not account for the very large apparent excess of the cells in the ganglia. The excess will probably be found to be due to the immature cells which have not yet sent their axones out any great distance. The higher one goes in the nervous system, the greater appears to be the excess of cells found in the different localities. In man the excess is probably much greater than in the frog or rat. That is a rather dangerous thing to say, he said, because it is in the nature of a prophecy. However, it does not appear to be impracticable. It is rather difficult to say what these cells can be doing and yet there appear to be many of them in the cortex and there is no reason why they should not appear in the spinal ganglia. It seems to be a property of the nervous system to contain more parts than it actually needs and lives up to.

As to the difference between the number of fibers and the number of cells in the thoracic and lumbar regions as compared with the cervical region, he believed that possibly the sympathetic nerves have something to do with this. He said his first impulse was to associate the excessive number of cells in the thoracic region with the sympathetic connection which is absent in the cervical. This, however, is but a poor explanation, as it is open to question.

DR. HUGH T. PATRICK inquired whether the fibers in the brain had ever been counted; whether there is a tremendous increase in the fibers with the mental and intellectual development of the individual, or whether they simply take on sheaths; whether the corpus callosum at birth contains more fibers than in the adult.

DR. DONALDSON said that he had found the fibers present, but they did not have any medullary sheaths. The cell bodies might be present, he said, but not their axones. He felt that the axones are a later growth in a large number of the cell elements. These observations have been made only from the standpoint of medullation, showing the increase in medullation as maturity is reached. He was positive that the axones are not present in rats. The rat's cerebrum can be cut very deeply and a few weeks later it is impossible to find the scar. The wound grows over completely, because the brain is cut at a time when most cell elements are in a neuroblast stage. There are no axones. For that reason it is difficult to find the place of injury.

DR. J. W. ENGBERT said that from comparative anatomy and biology it has been ascertained that the cord at one time had different segments which seemed to be more or less similar. In man it is found that certain segments gain a great deal, as, for instance, the cervical and lumbar, whereas the thoracic loses. In what does the gain consist? Do the segments gain chiefly in cell bodies, or do they send out fibers?

DR. DONALDSON said that in the gray substance where it is voluminous, there is an excessive number of cells. There is also an excessive number of fibers as is shown by the rise in the curve in the white substance coincident with the enlargement of the gray. The white substance is distributed both around the gray matter and within it. In the lumbar region the gray matter is comparatively less than in the cervical enlargement, and in that sense the smallness of this segment is really a reduction in the amount of white matter in it. It is accomplished by change in the shape of the cells. They lie like watermelons, on end, in the thoracic region; on their side in the cervical, and in the lumbar region as if they were sat on on their side, with the widest plane in the plane of this section. They have different shapes, according to the segments in which they are located. Though the segments are short in the lumbar region, the amount of gray matter is as large as in the cervical segment.

DR. L. F. BARKER advanced the supposition that if the base line were made so that the segment distances were equal, how, then, would the gray matter lie?

DR. DONALDSON said that the vertical length would have to be multiplied by the horizontal length, and the difference in the area exaggerated by making the segments equal. There is a relative increase of gray matter in the two enlargements when reduced to cubic contents.

## Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

### PRESCRIPTION WRITING, XV.

*(Continued from page 531.)*

#### Estimating Size of Dose for Children.

There have been several rules introduced for estimating the size of the dose, but the one generally employed is Young's rule, as follows: The adult dose is taken as the unit, and the child's dose indicated by a fraction having the age as numerator, and the age plus 12 as denominator. For illustration, in prescribing for a child 6 years of age the following formula will explain how the size of the dose can be ascertained:

$$\frac{6}{6+12} = \frac{6}{18} \text{ or } \frac{1}{3}$$

Therefore a child of 6 years should be given a dose equal to one-third the size of an adult dose.

Some one has recommended the following plan for prescribing quickly and accurately for infants under one year of age: In a 3-ounce mixture, when a teaspoonful is given at a dose, direct the druggist to put into the mixture as much of each ingredient as may be given to an adult at one dose. The following prescription will serve to elucidate the rule:

℞. Tinct. nucis vom. ..... m. x | 66
Sodii bicarb. ..... gr. x | 66
Aq. aurantii ..... m. x | 66
Tinct. card. comp. q. s. ad ..... ℥iii | 90

M. Sig.: Take one teaspoonful three or four times a day in water.

It will be seen by the above illustration that the amount of each preparation is approximately a single dose for an adult. In short, the infant receives one-twenty-fourth the adult dose, which is a safe calculation. In children between the ages of 2 and 4 years the size may be increased so that the amount of each ingredient in a 3-ounce mixture may equal two or three times the adult dose.

Cowling's method is somewhat similar to the above. His rule is to divide the age next birthday by 24; consequently for a child of 6 years the following formula would apply: 6/24 = 1/4, or one-fourth the adult dose. The fault with this rule is that under ordinary circumstances the dose would be too small. Some physicians find 20 a convenient and safe denominator. Occasionally a rule is followed, based on the weight of the child, which is taken as the numerator of a fraction whose denominator is 140; this is supposed to be the average weight of an adult.

In prescribing for children as well as old people, exceptions arise in using certain drugs, as has been previously mentioned.

### Metrical System.

The metric system is certainly being employed more and more each year and every physician should acquaint himself with this method. It has the advantages over the apothecary system in that it is exclusively used in nearly all civilized countries, and, when once learned, mathematical calculations are more easily made, as it is based on the decimal system. In order to convert the apothecary system into the metric system and vice versa, the following tables of approximate weights and measures should be memorized:

TABLE OF WEIGHTS.

| | | |
|---|---|---|
| 1 grain | .065 | gram. |
| 15.43 grains | 1 | gram. |
| 1 dram (troy) | 3.90 | grams. |
| 1 ounce (troy) | 31 | grams. |

TABLE OF CAPACITY.

| | | |
|---|---|---|
| 1 minim | .061 | c.c. |
| 16 minims | 1 | c.c. |
| 1 fluid dram | 3.75 | c.c. |
| 1 fluid ounce | 30 | c.c. |

Thus, to convert grains or a fraction of a grain into the corresponding quantity in the metric system, multiply the number of grains by .065, and to convert the quantities written in the metric system into their equivalents in grains, divide by .065.

To convert drams into grams, multiply the number of drams by 3.75, and to convert grams into drams divide the number by 3.75, or less approximately and more conveniently by 4. The same rule is to be observed in dealing with ounces. But in converting minims, as observed in the second table, into the metric system the number of minims must be multiplied by .061 c.c., the number of fluid drams must be multiplied by 3.75 c.c., and the number of ounces by 30 c.c.

*(To be continued.)*

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### To Promote Elimination in Scarlet Fever.

The following is recommended by *Med. Standard* to increase the elimination and as a febrifuge in scarlet fever:

℞. Tinct. aconiti ..... m. viii | 50
Potassii citratis ..... ℥iii | 11 | 25
Syrupi limonis ..... ℥ss | 15
Aquæ q. s. ad ..... ℥iv | 120

M. Sig.: One teaspoonful every hour or two.

And as a gargle for the throat in scarlet fever the following:

℞. Acidi carbolici ..... ℥ss | 1 | 90
Glycerini ..... ℥i | 30
Aq. camphoræ ..... ℥i | 30
Pot. chloratis ..... gr. x | 66
Aq. destil. q. s. ad ..... ℥vi | 180

M. Sig.: Use as gargle or spray.

### Treatment of Subacute Vesicular Eczema.

Dr. Jay F. Schamberg recommends the following as an excellent application in the subacute form of eczema:

℞. Acidi carbol. ..... gr. x | 66
Hydrarg. chloridi mitis ..... gr. xx | 1 | 30
Pulv. amyli
Pulv. zinci oxidi, āā ..... ℥ii | 7 | 50
Petrolati ..... ℥ss | 15

M. Sig.: Apply locally once of twice a day.

This paste is valuable in all forms of eczema except the very acute forms. He recommends the following as a valuable antipruritic and cooling ointment in the different forms of eczema:

℞. Menthol ..... gr. v-x | 33-66
Acidi carbolici ..... gr. x-xx | 66-1.33
Ung. aquæ rosæ ..... ℥i | 31

M. Sig.: Apply locally to the itching surface.

### Guaiacol Inunctions in Tuberculosis of Childhood.

Dr. Rachford, in *Archives of Pediatrics*, has derived very satisfactory results from the use of the following ointment in treatment of tuberculosis of children:

℞. Guaiacol ..... ℥i | 3 | 75
Lanolini ..... ℥ii | 7 | 50
Adipis ..... ℥v | 18 | 75

M. Sig.: One level teaspoonful to be applied to the chest at bedtime each day and well rubbed in.

### To Abort Attacks of Coryza.

℞. Acidi carbol. ..... m. xv | 1
Aq. ammoniæ ..... m. xx | 1 | 33
Alcoholis ..... ℥i | 3 | 75
Aq. destil. ..... ℥ii | 7 | 50

M. Sig.: Five or ten drops to be placed on blotting paper and the vapor inhaled for a few times every two hours; or:

℞. Cocainæ hydrochlor. ..... gr. x | 66
Menthol ..... gr. v | 33
Salol ..... ℥ii | 7 | 50
Acidi borici ..... ℥i | 31

M. Sig.: To use as an insufflation four or five times a day.

### Treatment of Hemorrhoids.

The following is recommended as a local application in treatment of hemorrhoids:

℞. Morphinæ sulph. ..... gr. ii | 13
Olei olivæ ..... ℥ii | 7 | 50
Ung. zinci oxidi ..... ℥i | 30
Pulv. gallæ (nutgall) ..... ℥ii | 7 | 50

M. Sig.: Cleanse the parts thoroughly and apply locally once or twice daily; or:

℞. Acidi gallici ..... gr. xx | 1 | 33
Ext. opii ..... gr. x | 66
Ext. belladonnæ ..... gr. x | 66
Ung. simplicis ..... ℥i | 30

M. Sig.: Apply locally to the painful parts.

### Treatment of Granular Lids.

J. G. Huizinga, in *Amer. Med.*, mentions two classes or stages. In the first or catarrhal stage, the symptoms are those of an aggravated conjunctivitis and the granulations are not visible. Ice or the artificial leech is applied locally to reduce the congestion. He recommends the following to be instilled every hour:

℞. Acidi borici
Sodii biboratis, āā ..... gr. xx | 1 | 33
Aq. camphoræ
Aq. destil. āā ..... ℥i | 30

M. Sig.: A few drops into the eye every hour or two.

He also recommends that an application of tannic acid, boroglycerid, silver nitrate or protargol to the everted lid be applied once a day; an ointment of ichthyol 1 to 5 per cent. strength may be applied at night. In the second stage the secretion becomes muco-purulent and well-marked granulations are present. Often there is pannus due to irritation of the cornea. For this stage the same treatment is indicated as already outlined, except that hot applications are preferred. The follicles should be evacuated with a suitable forceps. After removal, the surface should be mopped with a bichlorid solution, 1 to 1000, followed by a boric acid douche. Excision of the redundant folds has been practiced and may be effective in

cases which resist other treatment. He favors metallic electrolysis. After cocainization the lid is everted and a constant current of five milliamperes used for five minutes with a copper or silver electrode. The deposited metal is believed by the author to be antiseptic. This operation may be repeated once or twice a week and is supplemented by a protargol solution 25 per cent. strength and boric acid washes.

## Medicolegal.

**Injury to the Eye.**—The Appellate Court of Indiana holds, in Van Camp Hardware & Iron Company vs. O'Brien, that where a girl not quite 9 years old had her left eye injured by another's negligence, the eyeball being cut open, causing her to suffer pain and lose the sight of the eye, an award of $2500 damages could not be considered so excessive as to warrant a judgment therefor being disturbed.

**Expert Evidence and Testamentary Capacity.**—The Supreme Court of Iowa holds, in the case of Marshall vs. Hanby, that it is not for a witness, though an expect, to say what will constitute capacity. That is a question of law for the court, and when advised, the jurors are to say whether, in view of all the evidence, it was possessed by the deceased at the time the will was signed. The opinion of the expert must be limited to the estimate of the mental condition of the person concerning whom inquiry is made, and never allowed to be given as to the effect of that condition upon the particular transaction being investigated.

**Court Not Entitled to Introduce Medical Witnesses.**—In a personal injury case against a street railway company the latter moved to require the party suing to submit to an examination by two physicians, named in the motion, for the purpose of ascertaining the character and extent of her injuries, and in order that the physicians might testify with reference thereto upon the trial of the case. This motion, on objection by the party suing, was overruled, but the trial judge offered to require her to submit to an examination by two doctors to be appointed by him, and the company filed a motion to that effect. The judge then named two physicians to make the examination, and the case went to trial. Later, and before the examination was made, the company withdrew its motion. On the following day the judge called one of the physicians, over the objection of the company, and asked him a number of questions, after which counsel for the party suing continued the examination. Then the judge called the other physician, over the objection of the company, and required the parties to examine him, over the objection of both parties. Now the Court of Appeals of Kentucky does not consider it necessary, in reviewing the case, South Covington & Cincinnati Street Railway Company vs. Stroh, to decide what might have been done had the examination been made before the withdrawal of the motion. But the examination having been made after the withdrawal of the motion, it thinks that it was clearly erroneous to introduce the physicians as witnesses in the manner in which it was done. It says that they were presumably disinterested, and the fact of their introduction by the court against the earnest protest of the defense tended to give undue weight and prominence to their testimony, in so far as it supported the contention of the party suing.

**Taking Injured Person to Hospital Against His Will.**—The Supreme Court of Pennsylvania makes use of the opinion of the lower court, in deciding the case of Ollet vs. the Pittsburg, Cincinnati, Chicago & St. Louis Railway Company. Here a boy 17 years of age, while endeavoring to climb upon a freight train fell from it, having the front part of his foot crushed under the wheels. He was immediately taken to a private house, the only one in the neighborhood. Then the crew of the train, having run to a town one or two miles distant, returned with the engine, and finding the boy in the house, and no one present except a young woman who lived there, took him on the engine to the town, where the company's physician was in attendance, and where an uncle of the boy was also at the station when he was brought there. Thence, upon the advice of the company's doctor, and accompanied by the uncle, he was taken to a hospital, where his foot was afterwards amputated. But at the time of the accident one or more other boys were present, and one of them went to the town to call the family physician of the boy's father, and another went to the house of the boy's father to call him. In consequence, when the crew of the train got back to the house, on the return thereto above mentioned, they were told by the boy that his family physician had been sent for, and that he did not want to go to the hospital, but they insisted that he should; carried him out; put him on the tender of the engine. This removal of the boy from the house by the railroad to the town, and thence to the hospital, was made the basis of an action for false imprisonment. That the crew of the train, in doing what they did, were endeavoring to act the part of the Good Samaritan, the court said, was perfectly plain, and it did not see how a jury could be allowed to find otherwise from the evidence. The circumstances certainly seemed to call for great haste, and one who endeavors to assist his neighbor who is in great danger and distress is certainly not liable for a mistake in judgment, nor did there appear to have been any such mistake in this case. In addition, the court said that it did not see how the railroad company could be held liable for a false imprisonment on these acts of its employes, which were certainly not done within the scope of their employment, which was that of a crew of a freight train. On this opinion, the Supreme Court holds that the court below properly refused to take off a non-suit.

**Skill and Contributory Negligence in Malpractice Case.**—The Supreme Court of Iowa holds, in the malpractice case of Decatur vs. Simpson, that locality is material, in determining the skill required of a physician. Here, the physician asked that the jury be instructed that, "The implied contract of the defendant when he assumed charge of the treatment of plaintiff's injuries was that he possessed and would employ in the treatment of the case such reasonable skill and diligence as were ordinarily exercised in his profession at and in localities similar to that in which he practiced, by the members as a body; that is, the average of the reasonable skill and diligence ordinarily exercised by the profession at the time and in places similar to G——. Regard is to be had, in determining this ordinary skill and diligence, to the improvements and advanced state of the profession at the time the case was treated." That this instruction announced the correct rule was conceded. And the court holds that it was not sufficient to give one similar in terms, except that it ignored locality. It also holds that in an action for malpractice, based on alleged negligence, in which the relation of the parties is material only as fixing the degree of care required, the party suing must negative contributory negligence. It says that there are many and respectable authorities to the contrary, but that it seems irrevocably committed to the doctrine, and has generally applied it in all cases where a party seeks to recover for the negligent or unskilful acts of another. Indeed, it says that the only exception it has recognized seems to be in cases where the owner of stock is seeking to recover for the unskilful acts of a veterinary surgeon. So, the party suing in this case having failed to show that he was not guilty of contributory negligence, the court holds that his petition did not state a cause of action, and was subject to demurrer, or the same question could be raised by motion in arrest of judgment. Nor does it consider that the overruling of such a motion was without prejudice by reason of the fact that the issue was submitted to the jury under an instruction that the burden was on the party suing to show freedom from contributory negligence. It says that the physician was compelled to first introduce his evidence regarding contributory negligence, and, of necessity, was limited to such acts and conduct of the party suing (the patient) as came to his knowledge. Under this order of procedure, all that the party suing needed to do was to negative these particular facts. That done, his case was made out, without showing his freedom from negligence generally. Manifestly, this was to the disadvantage of the physician, even though it be conceded the jury was properly instructed with reference to the matter.

# Current Medical Literature.

## AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

### Philadelphia Medical Journal, February 15.

1 The Proposed Change in the Administration of Hospitals for the Insane in the State of New York.
2 A Case of Osteitis Deformans. J. C. Wilson.
3 *A New and Improved Method of Closing Vesico-vaginal Fistulæ, with Report of a Case. A. Lapthorn Smith.
4 *What Constitutes "Septic Poisoning" in Accident Policies? G. W. H. Kemper.
5 The Progress of Knowledge Concerning Venom and Antivenene; A Synoptical Review of the Literature of the Past Fifteen Years. (To be continued.) Joseph McFarland.
6 The Surgery of the Spine. (Continued.) Samuel Lloyd.

### Medical Record (N. Y.), February 15.

7 *Tumors of the Central Nervous System—Remarks on Noteworthy Cases. Joseph Collins.
8 *Latent and Masked Malarial Fevers. Charles F. Craig.
9 Auto-intoxication and Disease from a Practitioner's Standpoint. Beverley Robinson.
10 Diabetes Mellitus—Etiology and Pathogenesis. Charles E. Nammack.

### American Medicine (Philadelphia), February 15.

11 *Surgical Treatment of Injuries and Diseases of the Pancreas. Roswell Park.
12 *A Consideration of 28 Cases of Tuberculous Peritonitis at the Boston City Hospital, with Particular Reference to the Results of Operative Treatment. John T. Bottomley.
13 *The Inhibition of the Contraction of Striated Muscle. Alexander Spingarn.
14 Respiratory Gymnastics; Pulmonary Atelectasis; Pulmonary Anemia. Albert Abrams.
15 One of the Etiologic Factors in the Production of Deflected and Deformed Nasal Septums, and the Methods for Its Relief. Nelson M. Black.
16 Popular Dose Measures, and Their Relation to the Use of the Metric System in Prescription Writing. M. I. Wilbert.
17 Medical Allusions in Shakespeare's Plays. P. S. Donnellan.

### Boston Medical and Surgical Journal, February 12.

18 Surgery of the Gall-bladder and Ducts. (To be continued.) John W. Keefe.
19 *Faulty Uterine Growth. Daniel H. Craig.
20 *Treatment of Inversion of Uterus. E. W. Cushing.
21 Variola or Smallpox. Joseph E. Duxbury.

### New York Medical Journal, February 15.

22 *The Management of Cerebral Hemorrhage, and Its Abortive Treatment. William Browning.
23 The X-Ray in the Diagnosis and Wiring in the Treatment of Fractures. Charles Graef.
24 Soaps of Lime and Magnesia in Urine. George E. Pfahler.
25 Age of First Menstruation on the North American Continent. (Concluded.) George J. Engelmann.
26 *Treatment of Lobar Pneumonia. Charles E. Nammack.
27 The Active Principle of the Suprarenal Gland in Genito-urinary Work. Charles Chassaignac.
28 How to See the Stomach Curvatures with Our Naked Eyes, Without the Aid of Intragastric Instruments or Inflation. Mark I. Knapp.
29 The Eye, Ear and Throat Sequelæ of Typhoid Fever. L. D. Brose.

### Medical News (N. Y.), February 15.

30 Address to the Graduates of the Training School for Nurses of the Colored Home and Hospital. T. Gaillard Thomas.
31 *Heredity. J. W. Kiernan.
32 *The Limitations of Medical Therapeutics. Frank Billings.
33 A History of the Army Post Exchange or Canteen. Dunning S. Wilson.
34 *The Roentgen Method in the Diagnosis of Renal and Ureteral Calculi. Charles Lester Leonard.
35 *Retinal Lesions of Chronic Interstitial Nephritis. Edward Jackson.
36 Exostosis of Femur Due to Traumatism. W. R. Townsend.

### St. Louis Medical Review, February 15.

37 Treatment of Infantile Atrophy. John Zahorsky.

### Cincinnati Lancet-Clinic, February 15.

38 *Consideration of Two Operations for Hemorrhoids. H. A. Ingalls.
39 Hematoma of the Ovary. S. P. Kramer.
40 Two Difficult Forceps Deliveries. John B. Enright.
41 Some Obstinate Bladder Cases. George W. Hopkins.

### Pediatrics (N. Y.), February 1.

42 *The Action of Heat upon Cow's Milk as an Infant Food. S. Henry Dessau.
43 Hygiene of the Mouth. S. L. Goldsmith.
44 Congenital Heart Lesion. Wm. J. Butler.

### American Practitioner and News (Louisville, Ky.), January 1.

45 Surgical Aspect of Intracranial Tumors. J. T. Dunn.
46 The Easement of Labor by Use of Heat and the Retained Injection. William A. Galloway.
47 Extrauterine Pregnancy: Operation at 266th Day; Recovery. D. C. Bowen.

### Archives of Ophthalmology (New Rochelle, N. Y.), January.

48 Case of Embolism (Thrombosis) of a Branch of the Central Retinal Artery Treated with Forcible Massage; Recovery; A Barkan.
49 Further Clinical Experiences with Haab's Giant Magnet, with Some Experimental Statements Regarding Hirschberg's New Large Hand-Magnet. A. Barkan.
50 Papillo-Retinitis Due to Chlorosis; Two Cases in Which Eye-Strain Was Relieved by Vertical Decentration of Lenses. Cassius D. Westcott and Brown Pusey.
51 Ciliary Processes in the Pupillary Area. R. Schweigger.
52 Ciliary Processes in the Pupillary Region. J. Herbert Fisher.
53 On Leucemic Pseudo-Tumors in the Retina. Hugo Feilchenfeld.
54 Remarks upon A. S. Percival's Article upon "Perioscopic Lenses." F. Ostwalt.

### University of Pennsylvania Medical Bulletin (Philadelphia), January.

55 *The Pathology of Diabetes. Simon Flexner.
56 Cervical Rib. Henry K. Pancoast.
57 *Cerebral Lesions in Experimental Lead Intoxication. D. J. McCarthy.
58 *A Review of the Literature of Ovarian Transplantation. William R. Nicholson.
59 *Observations on the Nature and Diagnosis of Acute or Infective Endocarditis. Aloysius O. J. Kelly.
60 *The Pathogenesis of Lacunar Keratosis of the Tonsil. George B. Wood.

### Maryland Medical Journal (Baltimore), February.

61 Gunshot and Stab Wounds of the Stomach. Randolph Winslow.
62 The Treatment of Incipient Pulmonary Tuberculosis. George C. Johnston.

### Journal of Medical Research (Boston), January.

63 Notes on the Occurrence and Habitat of Anopheles Punctipennis and Anopheles Maculipennis in the Valley of the Androscoggin. Edwin O. Jordan.
64 *Iodophilia. Edwin A. Locke and Richard C. Cabot.
65 Coffee and Tea as Precipitants for Poisons. Torald Sollmann.
66 *Dermoid Cysts and Teratomata of the Anterior Mediastinum. Henry A. Christian.
67 *The Movements of the Intestines Studied by Means of the Roentgen Rays. W. B. Cannon.
68 *Leucocytosis After Violent Exercise. Ralph C. Larrabee.
69 *Tubular Perivascular Sarcoma, Its Origin, Structure and Metastasis. H. C. Low and F. B. Lund.
70 The Intercuneiform Bone of the Foot; a New Bone. Thomas Dwight.
71 Branching in Bacteria, with Special Reference to B. Diphtheriæ. Hibbert W. Hill.
72 Observations on the Morphologic Variations of Certain Pathogenic Bacteria. A. P. Ohlmacher.
73 A Rapid Method for the Differential Staining of Blood Films and Malarial Parasites. James H. Wright.
74 On the Blood Lymph Cells and Inflammatory Processes of Limulus. Leo Loeb.

### Journal of Mental Pathology (N. Y.), December-January.

75 *The Trial, Execution, Autopsy and Mental Status of Leon F. Czolgosz, Alias Fred Nieman, the Assassin of President McKinley. Carlos F. MacDonald. With a Report of the Postmortem Examination. Edward A. Spitzka.
76 Acute Delirium. B. Semidalow and V. V. Veidengammer.
77 On the Frequency and Significance of Transverse Striæ of the Finger-Nails in the Normal, the Criminal and the Insane Subjects. Marco Treves.
78 A Clinical Study of Morbid Obsessions and Impulses. Louise G. Robinovitch.

### Journal of Advanced Therapeutics (N. Y.), January.

79 A Case of Rectal Stricture Treated by Electrolysis. Walter H. White.
80 Armamentarium and Modus Operandi of the Treatment of Urethral Stricture by Electrolysis. Robert Newman.
81 *The Use of Electricity in Renal Disease. A. D. Rockwell.
82 The Case of Mrs. D.—A Study in Contemporary Gynecology. G. Betton Massey.
83 Therapeutics of Dry Hot Air. Clarence E. Skinner.

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84 Hystero-neurasthenic Paralysis. Francis H. Bishop.
85 A Case of Round-Celled Sarcoma Successfully Treated by X-Ray Exposures. Frank A. Kirby.
86 Therapeutics of Dry Hot Air. Clarence E. Skinner.
87 The Value of Electricity in the Gynecological Work of the General Practitioner. Marcus S. Wheatland.
88 *Hot-Air Treatment of Rheumatism. J. D. Gold.

### American Medical Compend (Toledo, Ohio), February.

89 Malignant Disease of the Mammary Gland. Wm. J. Gillette.
90 The Practical Aspects in the Treatment of Cervical Carcinoma, in Their Relation to the Diagnosis Thereof. J. H. Jacobson.
91 What Insanity Really Is. Hiram A. Wright.
92 Brain Complications in Suppurative Ear Disease. F. G. Stueber.
93 Report of a Case of Morphinomania, with Extravagant Claims of Aural Disease. Francis W. Alter.

### Journal of Experimental Medicine (Baltimore), February.

94 The Effects of Subminimum Doses of Strychnin in Nephrectomized Rabbits. S. J. Meltzer and W. Salant.
95 Contribution to the Pathologic Anatomy of Malarial Fever. James Ewing.
96 *The Etiology of Acute Dysentery in the United States. E. B. Vedder and C. W. Duval.

### Medical Dial (Minneapolis), February.

97 Lateral Cervical Triangle. Byron Robinson.
98 State Preventive Medicine—Its Progress and Influence. Franklin Staples.
99 Notes on the Use of Tannopin in the Summer Bowel Troubles of Children. Caryl B. Storrs.

### The Post-Graduate (N. Y.), January.

100 *Pleurisy, Errors in Diagnosis and Treatment. William Henry Porter.
101 *On the Treatment of Heart Diseases. Thomas E. Satterthwaite.
102 Some Observations on the Haab Magnet. Frank Van Fleet.
103 Clinical Bacteriology. Hermann Lenhartz.
104 Mosquito in Disease and Otherwise. Joseph Clements.

### Proceedings of the Pathological Society of Philadelphia, January.

105 Compression of the Brain in a Case of Hyperostosis Cranii. William G. Spiller.
106 A Case of Microcephaly. William G. Spiller.
107 Internal Hemorrhagic Pachymeningitis. William G. Spiller.
108 Melanosis of the Cerebrospinal Meninges. D. J. McCarthy and Mazyck P. Ravenel.
109 Latent Diffuse Gangrene of the Lungs, with Rupture and Fetid Pleurisy. James M. Anders and Joseph McFarland.
110 A Case of Fibroma Molluscum. M. B. Hartzell.
111 Case of Spontaneous Rupture of the Heart. Roland G. Curtin.
112 A Specimen of Bothriocephalus Latus. David Riesman.
113 A Case of Tuberculosis of the Skin Following Accidental Inoculation with the Bovine Tubercle Bacillus. Mazyck P. Ravenel.

### Kansas City Medical Index-Lancet, February.

114 *The Method of Teaching Diagnosis in the Northwestern Medical School. George W. Webster.
115 Report of Cases. (Hysterectomies.) J. B. Rolater.
116 Pneumonia: Its Diagnosis and Treatment. R. S. Magee.
117 Reminiscences of a Recent Trip Abroad, Including Visits to the London, Paris, Berlin, etc., Hospitals, Clinics, Medical Museums and Libraries, as Well as to the British Medical Association. (To be continued.) John Punton.
118 New Operation for Hemorrhoids. J. M. Frankenberger.
119 Puerperal Sepsis, Prophylaxis Treatment. H. C. Crowell.

### Carolina Medical Journal (Charlotte, N. C.), January.

120 Food Value of Alcohol: The Chemico-Physiologic Evidence. J. W. Long.
121 *Lachrymal Stenosis in Infants and Its Treatment. Dunbar Roy.
122 A Personal Experience with Anti-diphtheria Serum. M. R. Braswell.

### New Orleans Medical and Surgical Journal, February.

123 Fractures of the Long Bones of the Upper and Lower Extremities. E. D. Martin.
124 The Negro as a Surgical Subject. Lucien Lofton.
125 A Plea for More General Dissemination of Surgical Talent Throughout Our Country Towns. Burdett A. Terrett.

### Canada Lancet (Toronto), January.

126 *The Etiology and Early Diagnosis of Pulmonary Tuberculosis. D. Gilbert Gordon.
127 Acute Miliary Tuberculosis. Jas. Third.
128 Tuberculosis of the Pelvic Organs in the Female. Thomas S. Cullen.
129 Tubercular Disease of Bones and Joints. Hadley Williams.
130 Tuberculosis of the Alimentary Tract. R. J. Dwyer.
131 Genito-Urinary Tuberculosis. Geo. A. Bingham.
132 Glandular Tuberculosis. Herbert A. Bruce.
133 Tuberculosis of the Larynx. D. J. Gibb Wishart.
134 Tubercular Disease of the Middle Ear. Charles Trow.
135 On the Disposal of Tuberculous Sputum. J. H. Elliott.
136 The Relations of the Tuberculous and the Public. J. T. Fotheringham.
137 Tuberculosis—Some Needed Regulations. John Ferguson.
138 *Statistics of Tuberculosis in Canada. Charles P. Lusk.

### Nashville Journal of Medicine and Surgery, January.

139 Local Manifestations of Disease. J. S. Cain.

### New York State Journal of Medicine (N. Y.), February.

140 Prognosis and Treatment of Diabetes Mellitus. Abraham Mayer.
141 The Management and Treatment of Arteriosclerosis. Egbert Le Fevre.
142 *The Treatment of Carcinomatous Growths by Caustics. A. R. Robinson.
143 Malignant Disease of the Nose and Accessory Sinuses. (Concluded.) Joseph S. Gibb.

### International Journal of Surgery (N. Y.), February.

144 *Chemical Treatment of Traumatisms. R. Harvey Reed.
145 Nose and Throat Work for the General Practitioner. (Continued.) George L. Richards.
146 Briefs on the Surgery of the Genito-Urinary Organs. G. Frank Lydston.
147 The Surgical Assistant. (To be continued.) Walter M. Brickner.
148 Appendicitis: When to Operate. I. B. Perkins.
149 Urinary Calculi, Report of Three Cases. M. B. Saunders.
150 Rectal Prolapse of Many Years' Standing Successfully Operated on by Intra-Abdominal Traction and Fixation to Internal Oblique and Transversalis Muscles, the Analgesia Being by Intraspinal Injection of Cocain. F. W. Parham.

### Medical Standard (Chicago), February.

151 *Floating Kidney Idolatry—A Polemic. A. Rose.
152 A Neurological Clinic. (Muscular Atrophy, etc.) Daniel R. Brower.
153 Pain and Its Indications. (To be Continued.) Edward C. Hill.
154 The Jews in Medicine. E. Schreiber.
155 Mild Alcoholic Stimulation. Herman Gasser.

### Memphis Medical Monthly, February.

156 A Brief Sketch of the Evolution of Gynecology and Its Present Perfected Status. William D. Haggard.
157 Quinsy. E. C. Ellett.
158 Antimicrobes vs. Antitoxin. E. H. Randle.
159 Tetanus. James S. Rawlins.
160 Timely Suggestions. Jacob Deutsch.
161 Pulmonary Lithiasis. James S. Rawlins.

### The Medicus (Frederick, Md.), January.

162 Diphtheria and Its Treatment. T. B. Johnson.
163 Consideration of Some of the Functional Signs of Diseases of the Stomach. J. H. Potter.
164 Serum Therapy in the Treatment of Disease. Wm. Dow.

### Medical Times (N.Y.), February.

165 Ears and What We Should Know About Them. Edwin W. Pyle.
166 Angina Pectoris. Egbert G. Rankin.
167 A Study of Gastric Ulcer and Rheumatism. J. C. Patterson.
168 Paresis Following Typhoid Fever, with Discussion. Louis Frank.

### Southern Practitioner (Nashville, Tenn.), February.

169 Enteric Fever. R. B. Macon.
170 A Well-Tried Combination. Deering J. Roberts.

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3. **Vesico-Vaginal Fistula.**—The new operation described by Smith consists in the following procedures: 1. The vagina was incised across and in front of the cervix, pushing the bladder off from the uterus in the same way as in the first step of vaginal hysterectomy. The cervical laceration which extended up the internal os was operated on by the Emmet method. "2. The vagina was separated easily from the bladder with the finger everywhere except where the two torn edges had become united by fistula. With the finger between the vagina and the bladder it was quite easy, by a few cuts with the scissors, to separate them from one end of the fistula to the other. As this cut gave a raw edge there was no need of cutting away a single particle of either. 3. The long tear in the bladder was now caught with a catgut stitch at either end, only taking in the muscular wall and held on the stretch by an assistant. It was only the work of a minute or two to bring the muscular wall together with an over-and-over fine chromicized catgut suture going back fully an eighth of an inch on each side, but taking care never once to penetrate the cavity of the bladder or even to touch the mucous membrane. When this was finished there was a strong ridge on the site of the tear, nearly one-fourth of an inch wide, which was tested with sterilized milk injected into the bladder from a fountain four feet above it, giving quite a pressure and not a drop came through. 4. The slit in the vagina was closed with interrupted silkworm gut passed through the vagina, then through the muscular wall of the bladder but half an inch to the right of the tear in the bladder, and then through the other side of the vagina, thus displacing the bladder half an inch to the patient's left, so that the line of suturing in the two membranes was no longer in the same place as the line of the tear was. By this means the line of suture of the bladder was backed up or strengthened in front by half an inch of solid vagina instead of a line of sutures, and should any pressure be accidentally brought to bear upon the sutures in the bladder, it would have to overcome a valve instead of a hole, and the harder it pressed the tighter did the valve close." The catheter was left in for five days, after which the patient passed water naturally three or four times a day, and has had no trouble since. He lays special stress on three or four points, one is that by adopting this method we avoid leaving any stitches in the bladder mucous membrane, where they are liable to become the nuclei of most troublesome calculi. Stitching of the mucous membrane is quite unnecessary because the edges are brought together by the drawing together of muscular layer immediately underneath it. Instead of depending on the union of a narrow edge, about one thirty-second of an inch thick, we obtain a thick ridge fully an eighth of an inch thick in the bladder alone, to say nothing of the vagina against it. He emphasizes the great importance of leaving in a *catheter à demeure*, which should be used in every case in which anything has been done to the bladder wall, as it removes all tension and places the bladder at complete rest so long as it remains in. He thinks there is no longer any need of a woman dragging out a wretched exist-

ence when we have at our disposal such an easy and certain method of closing the very worst vesico-vaginal fistula.

4. **Septic Poisoning and Accident Insurance.**—Kemper gives his experience with accident insurance companies as regards this disability and goes over the policies of different companies in regard to this point. He thinks the following propositions may be declared: 1. The surgeon who is insured and receives a disabling wound unfitting him for practicing his profession, is entitled to an indemnity whether he contracts septic poisoning or not. 2. A surgeon, while operating, may become infected through an old injury, or a new wound. The effects are the same in either instance. There is no valid reason why a policy should not indemnify alike in both cases. 3. If a surgeon can not recover indemnity from an infection received through a sore, or an abrasion, then he gains nothing from a clause or rider attached to his general policy. In other words, the term "septic poisoning" in an accident policy is simply an aid to secure policy holders!

7. **Brain Tumors.**—Collins' article is largely casuistic; he reports five cases of brain tumor showing certain points of interest. One of these was a tumor of the pons with the symptom of unilateral ataxia, extending from the beginning of the illness to the end, an extremely rare accompaniment. It is credited by him to lesion of certain fibers of the fillet, the central sensory pathway. There was also absence of choked discs, of degeneration reaction in the right seventh nerve and of pressure symptoms. The sense of hearing was also unaffected. Another was a case of syphiloma with nuclear symptoms and diagnosed as a tumor of the pons, but found in the anterior portion of the left hemisphere. The third case was a rare instance of cerebellar sarcoma in a child.

8. **Latent and Masked Malaria.**—Craig gives an analysis of 195 cases treated at the Presidio Hospital in returned soldiers from the tropics. Of these, 44 were tertian, 1 quartan and 150 estivo-autumnal infection. The clinical diagnosis before the blood examination in the majority of cases was chronic dysentery or diarrhea. In 14 cases pulmonary tuberculosis was diagnosed. Other ailments and derangements were clinically diagnosed in one or two cases each. He thinks that the occurrence of masked malaria in cases coming from the tropics is a matter of the greatest importance and in dysentery cases the marked debility that exists is often due to this complication. There is also evidence of the estivo-autumnal form originating in San Francisco. From an analysis of these cases he calls attention to the danger produced by malarial infection complicating any disease and to the good effects of elimination of this element.

11. **Surgery of the Pancreas.**—Park comprehensively reviews the surgical possibilities of the pancreas, noting the injuries that may occur and routes and methods in which the organ may be reached. In acute traumatisms the indications are, to check the bleeding, to prevent escape of pancreatic juice, to suture, etc., to disinfect the cavity, and to repair the balance of the injury. The fatality of such traumatisms is not easily ascertained. At least four cases of men injured during the Civil war lived for a period after their injuries and died from complications, and how many others had the viscus injured and completely recovered may never be known. There has been no case of complete removal of the pancreas in the human subject, but a great portion of it has been and can be spared and nearly all of a prolapsed pancreas has been removed. In a few cases prolapse of the pancreas has been noted and certain portions have been removed from such cases or the prolapse has been reduced. For malignant tumors of the head of the pancreas there is probably no hope, but in localized abscesses or tumors of the splenic portion excision of the splenic end has been successfully practiced and is as justifiable as removal of this part for gangrene. Pancreatic cysts have been thoroughly dealt with by Senn and others, and their surgery more fully discussed than some other lesions. Park remarks that operation is often difficult from adhesions and these of such strength that injury to other organs may occur from breaking them up. The cyst may be exposed and tapped and a portion of the redundant part cut away, the remainder sewed to the abdominal wall and drainage provided for with a large tube. In a few cases the cysts have been pedunculated and, therefore, could be extirpated. The surgeon should be prepared to find more or less of the true pancreatic tissue stretched over such a peduncle, and if it can be done it would probably be better to peel this pancreatic tissue back before ligating the peduncle. The amount of discharge is enormous in these cavities, but where radical measures are impossible, drainage usually is followed by slow contraction and final healing, and where possible it is desirable to explore for calculus. Some pancreatic cysts are the result of obstruction of the duct of Wirsung, and removal of such calculi, if they can be detected, should certainly be made part of the operative procedure. If the calculus can be found it should be removed by excision. Whether this be done through the texture of the gland, or through the extremity of the duct, or through the duodenum, depends on the case. In some instances it has been possible to draw the stomach so far forward and outward as to bring the duodenum into the field sufficiently to justify opening it and going through it into the diverticulum of Vater, and one should be prepared to do this if necessary. Acute pancreatitis is discussed at some length. The cases of the severest type need early and prompt intervention. Those which go on to gangrene offer more hope to surgery. Park says an acute pancreatitis is characterized in the case in hand by fat necrosis, hemorrhage, pus or gangrene. In cases where the tumor can be felt in the left lumbar region, the entire operation can be done from the rear, and Park advises exploratory operation in most cases of acute pancreatitis with decided symptoms. There seems to be a connection between pancreatic disease and hemorrhage. The more acute the symptoms, Carnot claims, the greater the liability to hemorrhage and that it often follows grave traumatism as well as sometimes poisoning by mercury and other chemicals. The treatment of acute pancreatitis is virtually that of peritonitis of the upper abdominal cavity and consists very largely, as Fitz has suggested, in drainage. Early operation is just as wise as in fulminating appendicitis. Drainage is preferable posteriorly, though the initial operation is usually made anteriorly. In subacute pancreatitis, treatment consists for the most part in opening and of drainage of localized abscesses. In chronic pancreatitis the treatment consists in a large measure of attacks on the biliary passages, which for the most part are best approached by incision through the right rectus, or by Bevan's sigmoid incision, splitting the rectus as far as needed, the cut being several inches long. Most cases are produced by conditions having their origin in the biliary organs and involving the pancreas only secondarily. The cases of pancreatic calculus causing obstruction of Wirsung's duct, of course, are well known and probably more would be reported were observations and examinations more frequently made. Most of the cases are characterized by jaundice as well as enlargement of the liver and gall-bladder. Cipriani has emphasized the diagnostic importance of glycosuria as well as the presence of calculi in the feces. In some cases the difficulties would suggest the expediency of cholecystenterostomy, which may be the best way out of the trouble, especially when there is well-marked obstruction in the neighborhood of the diverticulum of Vater. The relief of tension afforded by draining the bile-ducts may indirectly drain the pancreatic ducts and lead to subsidence of the pancreatitis. Simulation of malignant disease by chronic interstitial enlargement, especially of the head of the pancreas, should not be a barrier to operation in cases in chronic jaundice where the health is failing, since much can be done so long as malignant disease is not present. The method of reaching the calculus is described. Pancreatic tuberculosis in most cases is probably due to extension from neighboring foci, primary tuberculosis being certainly rare.

12. **Tuberculous Peritonitis.**—Bottomley has studied the effects of operation on tuberculous peritonitis at the Boston City Hospital in 28 cases, which he tabulates. The immediate results are almost always improvement, at least in the general if not in the local condition. The remoter results are not so uniformly good, but he reports in the 28 cases 9 of recovery

ranging from fourteen months to five and one-half years of observation. Several cases are not traced and others report improvement for periods of several months. He summarizes as follows: 1. We may reasonably expect cures (*i. e.*, one year or more after operation) to follow the operation in from 30 to 40 per cent. of all cases. In fatal cases the patients usually die within a few months after operation. 2. Family history does not appear to be important etiologically. Previous inflammatory affections of the abdominal viscera may have etiologic significance. 3. Operation usually affords at least temporary improvement either locally or generally even in cases that later may prove fatal. The use of drainage following the operation should be avoided when possible. 4. Inferences as to the remote results of operation should be drawn very guardedly, if at all, from the immediate results; though in cases which do not immediately receive from an operation either local or general benefit, the prognosis is very unfavorable.

13. **The Inhibition of Muscular Contraction.**—The points attempted to be brought out by Spingarn in this essay are summarized as follows: 1. It is possible, by means of electric, mechanic, physical and chemic stimuli, to inhibit a condition of muscular contraction. 2. All motor nerves probably contain two sets of fibers, one excitatory and the other inhibitory—the excitatory ones ordinarily predominating in their effect on the muscles. 3. The function of the inhibitory fibers is to prevent an excessive manifestation of the energy of the muscle, when the latter has been aroused to contract; the inhibitory fibers bearing a relation to the muscle-machine somewhat like that of the "governor" to the steam engine.

19. **Faulty Uterine Growth.**—The condition here treated of by Craig is non-development of the uterus, which is often seen in young women from 15 to 17 years of age or who have recently passed the period of puberty. They have lived a sedentary and studious life, which almost invariably results in a sluggish metabolism and constipation, and are usually long and constant sleepers. The principal factor in the diagnosis is the uterine probe. If the body cavity equals or exceeds in depth that of the cervix a hopeful prognosis may be given, though both measurements are small, but if the cervical canal exceeds that of the body an unfavorable prognosis is the only one justified. Treatment must be both general and local, and it is usually best to withdraw such a patient from school or the sedentary occupation for about a year, and to require out-of-door life. Iron often has been useful, even in cases where it did not seem to be indicated. The local treatment employed by him has been the intracervical application of impure carbolic acid, negative galvanism, and faradism, and these have been supplemented by prescribing for the patient's home use very hot two-quart douches each night. Where this treatment has no direct result discission may be used and has proven almost invariably useful. There is some danger of increasing the retroversion tendency, and especially if the intra-uterine electrode be used, and if the sagging shut off the circulation the result is to stop the growth. He therefore has used pessaries to properly support the uterus from the start and he ordinarily employs a small soft or hard rubber retroversion pessary, with or without a bulb, according as the ovaries show a tendency to prolapse or not. The smallest pessary that will do the work should be used. If the patient is frequently seen there is no danger of its doing any harm. He requires the patient, as a rule, to wear it six months after the uterus becomes of normal depth and menstruation is regular. It is then removed tentatively and the patient seen once a week until after the next menstruation, to make sure that the ligaments are sufficiently strong. One caution seems specially noteworthy, and that is to see that the flows of blood are really catamenial and that the increase is actual growth and not merely swelling due to inflammatory reaction. Bleedings from the uterus accompanied by swellings are easily induced, but this is not what is desired.

20.—This article has appeared elsewhere. See THE JOURNAL of February, ¶83, p. 480.

22. **Management of Cerebral Hemorrhage.**—Browning advises elderly persons and those giving evidence of senility to avoid excessive strain as well as physical shocks, jars, braintire, and severe muscular exertion are included. Mild constipation, indigestion, rush of blood to the head, insomnia and prolonged worry must all be attended to. He gives illustrative cases showing how the attacks begin and the necessity of prompt and proper treatment. The first and main principle that he wishes to advocate is the use of powerful, quickly-acting muscular and vaso-depressants. Among these he ranks first gelsemium, then aconite and veratrum. He would start the fluid extract of gelsemium in 10-drop doses and continue with from 5 to 10 drops as indicated, or with gelsemin in doses of 1/10 to 1/8 of a grain and continuing in 1/20. Aconitin might be given at first in doses of 1/100 to 1/50 of a grain. The initial dose often needs to be large or else rapidly repeated until the physiologic effect is produced. If the cause be traumatic, the same principles hold good. He would absolutely immobilize the patient as far as possible, allowing no muscular exertion whatever and though purgatives may sometimes be needed it is not necessary to disturb the patient by their use. Phlebotomy is more than replaced by the depressants. The use of gelatin to prevent hemorrhage is mentioned, but its action is considered too slow to meet the emergency. The question whether it may be used as a prophylactic is suggested. For the headache that so frequently attends the attack, antipyrin and its allies in small doses do well, but the depressants are best for the restlessness. Sometimes a little bleeding would be good, and he suggests the methodical trial of nasal scarification in suitable cases. Where nephritis, syphilis or alcoholism exists we must remedy that factor as well as we can. Among the "don'ts" he says "don't give stimulants, don't resort to saline injections, don't use depressing diaphoretics, don't prescribe digitalis, don't resort to opiates, don't try the nitrites as their use in any form is here out of place, don't permit any muscular exertion on the part of the patient." In the subacute stage, after about one week, during which the patient has been kept as quiet as possible, the rent may be assumed to be permanently obstructed and we may allow limited exercise. As the arterial tension demands it the vascular depressant should be kept up in smaller doses. The return to exercise should be gradual. In the chronic state he believes in cultivating whatever power remains and gives directions as to the exercises that are advisable.

26. **Pneumonia.**—Nammack is doubtful as to the value of the serum treatment and the most that can be said is that it does no harm. The increase of leucocytosis is a favorable symptom, but we should avoid anything that increases leucocytosis and also weakens the heart; therefore, pilocarpin, acetanilid, antipyrin and nuclein are not advisable. The patient should be kept in a cool, well-ventilated room. A bodily temperature under 104 F. requires no special antipyretic measures, since a moderate elevation of temperature may be welcomed as useful in the presence of infection. Temperature above 104 F. may require a compress of linen wrung out of water at 60 F. and applied around the chest; if associated with delirium an ice helmet can be ordered in addition. Snug bandaging will help the pain, cough or dyspnea, and Dover's powders will be a valuable adjuvant. When hepatization has occurred, his faith remains pinned to four things, strychnin, nitroglycerin, alcohol and oxygen. The first two will be sufficient in the moderately severe cases. His practice is to order 1/60 of a grain each of strychnia and nitroglycerin in a teaspoonful of wine of pepsin every two hours with six ounces of milk, and Apollinaris water two ounces, on the alternate hour, the cold water in the intervals *ad libitum*. If these remedies fail to hold the case and the pulse goes up to 120 then whisky is ordered in half-ounce doses frequently repeated, as better than in larger quantities at longer intervals. Nammack believes that alcohol has a triple use in pneumonia: It reduces temperature by evaporation and radiation; lessens the heat production and, most valuable of all, it supplies a fuel or food to be burned up instead of tissues. Its drawback is that it tends to produce relaxation of the peripheral capillaries and to favor stagnation in them, with damming back of the blood upon the right heart, which must be met by the conjoint admin-

istration of vasomotor stimulants, like strychnin. Regarding the use of oxygen in pneumonia, he gives no logical reason for its value, but admits that it is of use. It is possible that it is inimical to the germs. The author is in accord with Dr. Keefe in his statement that without primary venesection it is never safe or advisable to make any considerable addition to the circulating fluids at the acme of an acute disease like pneumonia. The chief cause of death in uncomplicated cases is degeneration of the myocardium, due to toxemia and mechanical obstruction. Our objects of treatment are to eliminate the poisons and sustain the heart, and since the lungs and usually the kidneys are crippled, our available avenues of elimination are the bowels and the skin. The familiar "five and fifteen" (calomel, 5 grains; sodium bicarbonate, 15 grains) followed by saline laxatives, and repeated judiciously during the progress of the case, will attend to the gastro-intestinal system. The skin may be acted upon by water—cold, tepid or hot—each according to its special indications. The peripheral circulation or resistance are kept up by the vasomotor stimulants, strychnin, alcohol, and nitroglycerin. Local treatment is often expected by friends in private cases and it is cruel and unnecessary to disappoint them altogether, but it is more cruel and unnecessary to blister, poultice and bake a patient's thorax. He calls attention to the danger of pneumonia spreading to other members of the family, especially when they are in close attendance on the patient. The disinfection of pneumonia sputum and disinfection of the house in which several cases have occurred in rapid succession is suggested by Osler. He does not wish to have it understood that he follows any routine treatment by this mention of four principal remedies. It is the patient with pneumonia, and not the pneumonia that he treats. "Drugs are of no use unless mixed with brains."

31. **Heredity.**—This article, as stated in a footnote, is an expansion of the paper read before the American Medical Association and published in THE JOURNAL of February 8, p. 388.

32.—See abstract in THE JOURNAL, xxxvii, p. 1730.

34.—This article covers the same analysis of cases as the one which was abstracted in THE JOURNAL of February 15, ¶20, p. 479.

35. **Retinal Lesions and Bright's Disease.**—Jackson describes the retinal conditions in Bright's disease, including the alterations in the contour, size and color of retinal vessels, especially the alteration in the color of the optic disc, a dirty brick-red discoloration which is one of the earliest and perhaps the most constant ophthalmoscopic symptoms. It belongs to the stage of high arterial tension and may antedate any notable change in the urine. It is not well described in the usual account given to ocular lesions, but the author has observed it often and mentions it with no question as to its significance. The irregularity in the caliber of the vessels, the alterations of outline of the arteries, which may be set down with certainty as abnormal, notable contractions and considerable lengths of broadened vessels are more frequent than distinctly sacculated aneurysmal dilatations, though these latter do occur. Alterations in the contour of the veins are much more common and can be made out in practically all cases. The changes in the size of the vessels really include the foregoing conditions. The tortuosity of the retinal vessels is chiefly a sign of dilatation. It may be marked in a single vessel, but more frequently affects all. Pathologic tortuosity shows great variations of depth of the different parts of the vessels. The curves are toward and from the center of the eyeball as well as in the plane of the retina, but the most frequent guide to the character is the co-existence of other retinal lesions, particularly the irregular venous dilatations. He also notices changes in the color, darker in dilatation and paleness from anemia and changes due to opacity of the vessels, which are often yellowish from such causes. A rare but most striking condition is an opaque brilliant white color due to fatty degeneration which is usually confined to a single vessel or in limited patches, though it may be quite general as in one case observed. Retinal hemorrhage is pretty constant, but there are times when it can not be found. Usually the hemorrhage spreads in the nerve fiber layer to give it the usual flame shape, but smaller rounded dots of effused blood are frequent, and may be overlooked. Very large hemorrhages are rare in this condition. They are more apt to attend the toxic exudative form. How long any particular retinal hemorrhage will be recognizable is always uncertain. Small ones may be apparently unchanged for a considerable period and larger ones may rapidly disappear. Rapid and complete disappearance is probably a favorable signs. All these symptoms are dependent upon alteration of the vessel walls and are the retinal expression of the general vascular degeneration which is essentially a part of the disease. The edema and degenerative changes are so constantly associated with these that it is reasonable to suppose they have the same origin. Edema is usually localized or more permanent in certain parts than others. The brilliant white patches due to fatty degeneration are the most striking ophthalmoscopic appearances of chronic interstitial nephritis and probably always appear in cases that run the complete course. They may be the result of retinal hemorrhage, the late stage in the history of a mass of exudate or follow localized edema, but smaller patches may arise without any evident preceding lesion and seem to have a direct relation with the underlying vascular change or its cause. These may be found at the very first examination of the case, but are usually of later appearance. The masses of exudates cause swelling and dirty reddish-white blotches of the fundus which undergo great changes and may sometimes entirely disappear. The large majority of patients who present these lesions die within a year or two. In conclusion he says: "Whether the vascular changes cause the retinal lesions, or whether their connection is that both spring from a common cause, the retinal symptoms take from this close connection great importance. They throw light upon what goes on in the central nervous system, and modified *pari passu*, in other organs of the body. Whether considered as a means of understanding the essential nature of this disease process, or as throwing light on the character and course of the individual case, they have an importance that the mass of physicians very imperfectly appreciate."

38. **Hemorrhoids.**—The two operations here described by Ingalls are the Thompson modification of the Whitehead operation and the Keiller method, which consists in dissecting under the mucous membrane for about an inch above the anus and depriving it of its veins and connective tissue. It is then re-sutured, using a padding or plug of iodoform and gauze in the rectum with central drainage tube, and removing it in twenty-four hours. He thinks this last operation deserves first place among recognized procedures for the relief of this very troublesome condition. The chief points of superiority are: 1, No danger of stricture; 2, no possibility of recurrence, all venous radicles being removed; 3, the least danger of infection; 4, no blood clot in the peri-anal space; 5, the greater comfort of the patient.

42. **The Action of Heat on Cow's Milk.**—Dessau claims that the action of heat on cow's milk when exposed for ten minutes to a gradual rise to from 140 F. to 160 F. does not coagulate the albumins and nucleins, neither does it decompose the fats nor render the calcium salts insoluble. It does, however, destroy or inhibit the growth of 99 per cent. of the vegetating germs in the milk and it does modify and alter the curdling of the caseinogen to the extent of approaching nearer to that of the curd of human milk. This action of heat upon the digestibility of casein is increased by dilution with plain water and possibly also by gruels made from cereals. While his ideas are not exactly in accord with the present theories of imitating human milk on a so-called scientific basis and as the observations on the digestibility of heated cow's milk do not entirely agree with those of other authorities, he claims that it is submitted on the basis of careful observation and not on any mere theory or laboratory results. His experience enables him to make the emphatic assertion that cow's milk prepared in this way by heating will not only make infants thrive when given as a daily food, but that the same results were obtained in numerous instances where other artificial foods, including home modification or percentage feeding, had previously markedly failed.

55. **Diabetes.**—Flexner states the limits of our knowledge concerning pancreatic diabetes and mentions the evidences of other forms. He thinks it probable that diabetes can also result from disease of the liver, but the theory is less satisfactory. The notion that the pancreas regulates the carbohydrate metabolism seems to be most in favor, though he points out that it is purely hypothetical. It is largely supported by analogy with other glands, such as the thyroid and adrenal. Thus far the number of theories advanced fail to explain all the phenomena, but it seems to be demonstrated beyond doubt that diabetes results from failure of a special internal function of the pancreas and that it is not due to nervous lesions or the absence of the digestive secretion of the organ. That pathologic conditions of the central nervous system and perhaps of the sympathetic system and larger peripheral nerves may give rise to glycosuria and diabetes is, of course, established, but there is no evidence to show that such exert a direct influence on carbohydrate metabolism and thus produce the condition. What this relationship between the central nervous system and the organs of carbohydrate metabolism is we are not informed, but the influence of this secondary organ is maintained by the author. The occurrence of renal forms of diabetes, he holds, is still unproven. Glycosuria and diabetes are not the same thing and a distinction is made between them. Glycosuria follows so many and different pathologic conditions that its significance is comparatively minimal. It may be rapid in appearance and just as rapid in disappearance. The organs that appear to preside over carbohydrate metabolism are the pancreas and liver, but their mechanism has not yet been solved.

57. **Lead Poisoning.**—McCarthy reports experiments on lead poisoning in dogs with brain examinations, showing a progressive degeneration with disappearance of the ganglion cells, followed by an increase in the gliar elements associated with a very remarkable non-inflammatory endarteritis and periarteritis. The reaction of the tissues in this case to an invading toxic irritant are very marked, and associated with the capillary hemorrhages would, in that sense, constitute an inflammatory process, but he prefers not to use this term in the absence of round-cell infiltrate other than that of proliferation of the gliar nuclei. The same process occurring in a human being could give all the symptoms, including the convulsions, of a case of paresis, and it can be easily understood how some cases present a clinical picture of that disease.

58. **Ovarian Transplantation.**—The history of ovarian transplantation is reviewed by Nicholson, who sums up the results of the work reported to date. It may be first stated that transplantation of the ovaries, either homo- or heteroplastically, is possible and that pregnancy will follow in a small proportion of cases. Further, it may be authoritatively stated that there is without doubt an influence inherent in the ovaries beyond the mere process of ovulation which is very important for the development of the genitalia and also for their conservation. Whether this is strictly an internal secretion or not remains to be proved, but there is a good deal of evidence pointing that way. The influence of transplanted ovaries may be most beneficial in the prevention of degeneration of the ovaries, but as yet too few cases have been reported to be conclusive. All the evidences adduced tend to strengthen the view that the whole ovary, or if that be impossible, at least a portion, should be left in all operations where the condition of the patient will permit.

59.—See abstract in THE JOURNAL, xxxvii, p. 995.

60. **Tonsillar Keratosis.**—The conclusions of Wood's paper are as follows: "1. The disease commonly called mycosis pharyngitis leptothricia is a true keratosis of the epithelium lining the crypts of the tonsils. 2. The leptothrix buccalis maximus, the bacillus buccalis maximus, and like organisms, do not possess any etiologic importance, but are present simply as saprophytes. 3. The disease is probably the result of a moderate degree of inflammation of the parenchyma of the tonsil, causing an increased growth of the normal epithelium of the crypts."

64.—See editorial in THE JOURNAL of February 22, p. 519.

66. **Dermoid Cysts.**—These cysts are described by Christian, who summarizes as follows: "1. Dermoid cysts and teratomata of the anterior mediastinum occur infrequently, generally give evidence of their presence during early adult life, and are of relatively long duration. 2. Their most frequent position is immediately behind the upper portion of the sternum. From there they may grow out into the lung or down between heart and lung. 3. These tumors may be classified as follows: (*a*) Tumors of ectodermal origin with the addition of some tissues from the mesoderm—dermoid cysts. (*b*) Tumors derived from all three germ layers—teratomata. (*c*) Dermoid cysts or teratomata which in some part of their structure show evident malignancy. The first class includes a large proportion of the reported cases. 4. The coughing up of hair is pathognomonic of this mediastinal condition. 5. Cure is possible only through surgical procedure. 6. The genesis of these tumors is to be referred to the fetal period of life. The origin of most is branchiogenic. Some may result from germ layers misplaced at the time of closure of the anterior chest wall."

67. **Intestinal Movements.**—Cannon has investigated the movements of the intestines with the Roentgen rays, using bismuth subnitrate mixed with food. He thinks the most notable activity of the small intestines is in the simultaneous division of the food lying in a loop into small segments and a rhythmic repetition of the division without any notable advance of food through the gut, mixing up the food and the digestive juices and bringing them in contact with the absorbing mechanism. Peristalsis is usually combined with segmentation. As the food is advancing, interfering constrictions often momentarily separate the rear end of the mass from the main body. The ileocecal valve is perfectly competent to prevent the repassage of food from the colon. The usual movements of the transverse and ascending colon and the cecum are antiperistaltic, occurring in periods about fifteen minutes apart. Thus the food in the closed sac is thoroughly mixed and again exposed to the absorbing wall without any interference with the processes in the small intestines. There is a gradual pushing, however, of the food forward. In emptying the large intestine, the material in the lower descending colon is first carried out by combined peristalsis and the pressure of the abdominal muscles. The remainder of the material is then spread into the evacuated region and this region again cleared. There is no evidence of antiperistalsis in the small intestine. Signs of emotion, such as fear, depression or rage, are accompanied by a total cessation of the movements of both the large and small intestines. The movements continue in the cat during sleep.

68. **Leucocytosis After Violent Exercise.**—The following are Larrabee's conclusions: Violent, prolonged, exhausting work produces a leucocytosis. This leucocytosis is made up principally by an increase in the polymorphonuclear cells, but the other forms may also be considerably increased in numbers. More than one cause acts to produce the leucocytosis, probably a temporary, mechanical cause, and also a toxic cause, more slow to develop, but lasting as long as the exercise continues."

69. **Tubular Perivascular Sarcoma.**—After reporting cases in detail and discussing the literature as to the origin, etc., of this class of tumors, Low and Lund say that in reviewing the history in connection with the pathological findings the chief conclusions to be drawn are as follows: "1. A pigmental growth of the skin may at any time take on malignant characteristics. 2. If the removal of a pigmented growth be undertaken at all, it becomes important for the surgeon to cut wide of the growth, as is the rule in carcinoma. All pigmented tissue should be removed practically in one piece, and without cutting through the tumor tissue. 3. Metastasis may take place from the peripheral organs to the brain, without the lungs being involved. 4. A melanotic sarcoma of the skin may in its metastases assume the type of a perivascular angiosarcoma."

75.—This article has appeared elsewhere. See THE JOURNAL of January 18, ¶9 and ¶10, p. 202.

81. **Electricity in Renal Disease.**—Rockwell finds that electricity is of value in certain cases of kidney disease. He

uses a high-tension faradic current in seances of not more than ten minutes' duration at first, but increasing to longer periods and employing as strong a current as the patient can reasonably bear. He also uses, in some cases, in connection and alternation with this, the static wave current, which has an advantage over the other of exceeding it in frequency and tension. He finds as a result of these infinitely rapid vibratory disturbances, which cause no pain or fever, a very marked influence on circulation and compensation. They affect the general nutrition at the same time. He also uses the older method of general faradization for its influence on the systemic nutrition.

88. **Hot-Air Treatment in Rheumatism.**—Gold finds the use of hot air exceedingly valuable in the treatment of chronic articular and muscular rheumatism and neuralgias, and thinks it not sufficiently appreciated by the profession. He uses the Betz's apparatus made in Chicago, but all others embody the same principle and probably may be equally effective. He reports several cases of rheumatic sciatica and gonorrheal rheumatism in which cure was effected by this remedy.

96.—See editorial in this issue.

100. **Pleurisy.**—Porter's paper reports a number of cases where difficulties in the diagnosis of pleurisy affected the treatment. They show the ease and accuracy with which most cases can be diagnosed, especially if the aspirating needle be used. They also show that at times it is almost impossible for even the best-trained diagnostician to be absolutely certain of the pathologic conditions, and that errors in diagnosis may result in permanent damage and possibly death, especially if the most scientific methods of treatment are not adopted early. They also illustrate positively the good results following free opening, meaning by this resection of the rib, cleansing of the pus cavity, and that small and valvular openings do not give the same favorable results.

101. **Heart Disease.**—Satterthwaite's paper aims to show that in the modern treatment of heart disease "milder methods are replacing older ones—in particular, that the idea of absolute rest has been superseded by rest alternating with physical activity; that venesection has been supplanted by restoration of the capillary circulation, mainly by resistance exercises and carbonated baths; hydragogue cathartics are in general to be replaced by stomachics, mild laxatives and diuretics; heart stimulants by general nerve tonics or sedatives and nutrients; while drugs of the digitalis group are being gradually avoided, except in particular instances, for the reasons that have already been given."

114. **Diagnosis.**—Webster describes the methods of teaching diagnosis in the Northwestern University Medical School, summing up as follows: "A combination of didactic lectures, recitations, laboratory work in normal diagnosis, clinical laboratory work, amphitheater clinics, ward visits and hospital clinics so arranged as to secure the greatest economy of the student's time with a maximum of individual instruction. Education in methods with the dominant idea that 'the whole art of medicine consists in observation.' Especial value placed on thorough training, in the laboratory work of normal physical diagnosis. Teaching one thing at a time and never taking the student out beyond his depth. Teaching all students how to write a concise, accurate clinical history and to make a general examination before taking up special examinations. Teaching them to reason rather than to memorize, a drawing out rather than a pouring in."

121.—Published in THE JOURNAL, xxxvii, p. 1671.

126.—See abstract in THE JOURNAL, xxxvii, p. 714.

138. **Tuberculosis in Canada.**—According to the résumé of the statistics here given by Lusk, it would seem that there has been no decrease in the last 25 years in the proportion of deaths from tuberculosis in Canada, while in England and the United States there has been a large decrease. Death returns from this scourge are there as great as those of the combined diseases of influenza, pneumonia, diphtheria and croup; as great as those from the diarrheas, heart disease and cancer; and greater than the mortality following pneumonia and the diarrheas of children and adults. Other noteworthy features are the frequency of meningeal involvement in Montreal, causing 15 per cent. of deaths, and that almost 10 per cent. are in children under one year; that 15.1 per cent. die between 20 and 24, and 12.5 per cent. die between 25 and 29. The death-rate in males is greater in the first decade and during and after the seventh, while among females it is greater between 10 and 40 years, reaching its maximum between 10 and 20. The disparity between urban and rural population is also noticed, the town inhabitant being almost twice as liable to infection as the dweller in the country. Altitude and soil exercise a considerable influence in increasing the liability; the large percentage of infection following repeated colds, debility, and those associated with pleurisy are also noted.

142. **Treatment of Carcinomatous Growths by Caustics.**—Robinson holds that cutaneous epithelioma can be removed by caustics by completely necrosing only the small part of the area invaded by the disease, and that excision by the knife should be employed only when the case can not be treated by caustics, which is very rare in cutaneous cancer, or where the operation would cause no deformity as on the scrotum. For deep-seated rodent ulcers and possibly for cancer of the penis, the Roentgen rays should be tried. The chief claims which he makes for caustics are that the deformity following the operation is much less than after excision, and especially that reappearance of the disease is rare after their proper use.

144.—See abstract in THE JOURNAL, xxxvii, p. 853.

151. **Floating Kidney.**—Under this title of "floating kidney idolatry" Rose argues against the importance of this anomaly. He believes that great benefit may be often obtained by strapping of the abdomen in patients who have splanchnoptosia and that it does more good than nephropexy in these and in consumption. His experience tells him that one is not justified in resorting to operation, to perform nephropexy in cases of splanchnoptosia without first having tried the method of supporting the abdominal muscle and that the method of strapping seems to be the best of all. He also holds that we are not justified in pointing out the floating kidney as being especially the cause of gastric and nervous symptoms in cases of splanchnoptosia.

## FOREIGN.

Titles marked with an asterisk (*) are abstracted below.

### British Medical Journal (London), February 8.

1 Two Cases of Perityphlitis (Commonly Called Appendicitis). David W. Finlay.
2 Appendicitis and Its Treatment. James Taylor.
3 Some Cases of Chronic Non-Malignant Gastric Ulcer. Arthur E. Barker.
4 *An Address on Some Points in Connection with Ulceration of the Stomach and Duodenum. C. R. Box.
5 *The Treatment of Intestinal Obstruction from Malignant Disease. Leonard A. Bidwell.
6 Two Cases of Recovery After Operation for Diffuse Peritonitis from Perforation of the Appendix. Charles A. Morton.
7 *On Intracranial Thrombosis as the Cause of Double Optic Neuritis in Cases of Chlorosis. C. O. Hawthorne.
8 Arsenic in the Hair of Beri-Beri Patients from Penang. Ronald Ross.
9 Contract Practice: The Evil and Its Remedy. A. Baillie McKee.

### The Lancet (London), February 8.

10 Two Cases of Solid Abdominal Tumor with Ascites. Thomas W. Eden.
11 Preliminary Note on the Possibility of Treating Mitral Stenosis by Surgical Methods. Lauder Brunton.
12 The Trial, Execution, Necropsy, and Mental Status of Leon F. Czolgosz, Alias Fred Nieman, the Assassin of President McKinley. Carlos F. MacDonald, with a Report of the Postmortem Examination. E. A. Spitzka.
13 Ovarian Tumors and Ovariotomy During and After Pregnancy. Alban H. G. Doran.
14 *Four Cases of Word-Blindness. James Hinshelwood.
15 A Case of Tumor of the Left Pre-frontal Lobe Removed by Operation. William Elder and Alexander Miles.
16 *Acute Suffocative Pulmonary Edema. Thomas Lissaman.
17 *The Decay of Auscultation and the Use of Binaural Stethoscope. H. W. Syers.

### The Practitioner (London), February.

18 *Scarlet Fever, Measles, and German Measles—Is There a Fourth Disease? Claude B. Ker.
19 What Is the Best Form of Operative Treatment for the Cure of the "Enlarged" Prostate? E. Hurry Fenwick.
20 *Auscultatory Percussion as a Means of Diagnosis in Thoracic Disease. S. H. Habershon.
21 *On Floating Kidney as a Cause of Obstructive Jaundice and Hepatic Colic. J. Hutchinson.

### Archives Gen. de Med. (Paris), January.

22 *Uremic Ulcerations in Stomach and Small Intestine. A. Mathieu and J. C. Roux.—"Sur un cas d'ulcération urémique de l'estomac et de l'intestin grêle."

23 Neutralization of Toxalbumins by Sodium Hyposulphite. E. Boix and J. Noé.—"Essai de neutralisation de quelques toxalbumines par l'hyposulfite de soude dans l'organisme animal."

24 Early Syphilitic Hydrarthrosis. F. de Grandmaison.—"Hydrarthrose syphilitique volumineuse et précoce."

25 Gastric Affections. G. Linossier.—"Les maladies de l'estomac." Revue critique.

26 *The Hospitals of St. Petersburg. M. Marcou.—"Les hôpitaux de St. Petersbourg."

### Bulletin de l'Acad. de Med. (Paris), January 21.

27 *Prophylactic and Therapeutic Indications in Pulmonary Phthisis Based on a Knowledge of Its Soil. A. Robin and M. Binet.—"Les indications prophylactiques et thérapeutiques de la phthisie pulmonaire fondées sur la connaissance de son terrain."

### January 28.

28 *Treatment of Club Foot by Ablation of All the Tarsal Bones. Lucas-Championnière.—"Traitement du pied bot par l'ablation de la totalité des os du tarse sans immobilisation ni appareil orthopédique."

### Echo Medical (Lille), January 26 and February 2.

29 *Modifications of the Reflexes in Spinal Traumatisms. O. Lambret.—"Des modifications des réflexes dans les traumatismes médullaires."

30 *Chronic Splenomegalia. A. Deléarde.—"Les splénomégalies chroniques."

### Presse Medicale (Paris), January 25 and February 2.

31 Segmental Topography of Pneumonia. P. Carnot.—"La Topographie segmentaire de la pneumonie franche."

32 Chromo-diagnosis of the Cerebrospinal Fluid. A. Sicard.—"Chromodiagnostic du liquide céphalo-rachidien."

33 Ganglionary Reactions in Children. M. Labbe.—"Des réactions ganglionnaires chez les enfants."

34 Suppuration of the Labyrinth. M. Lermoyez.—"La suppuration du labyrinthe."

### Semaine Medicale (Paris), January 29.

35 *Traumatic Scarlet Fever. R. de Bovis.—"La scarlatine traumatique."

### Beitraege zur Path. Anat. und Allg. Path. (Jena), xxxi, 1.

36 Small-cystic Degeneration of the Ovaries and Hydrops Folliculi. C. v. Kahlden.—"Ueber die kleincystische Degeneration der Ovarien und ihre Beziehungen zu dem sog. Hydrops Folliculi."

37 Coagulation Necrosis of the Striped Muscles. E. Oberndorfer.—"Exp. Untersuchungen ueber Coagulationsnekrose des quergestreiften Muskelgewebe."

38 Compensating Hypertrophy of the Kidneys. G. Galeotti.—"Ueber die compensatorische Hypertrophie der Nieren."

39 Parathyroid Glands. C. E. Benjamins.—"Ueber die Glandulæ parathyroidæ."

### Berliner Klin. Wochenschrift, January 20.

40 *Organotherapy of Pancreatogenic Fatty Diarrhea. H. Salomon.—"Zur Organotherapie der Fettstühle bei Pankreaserkrankung."

41 Manner of Transmission of Syphilis. W. Friedländer.—"Zur Uebertragungsweise der Syphilis."

42 *Psoriasis and Glycosuria. W. Pick.—"Psoriasis und Glykosurie."

43 Prophylactic Measures to Supplement Sanitarium Treatment of Consumptives. H. Gebhard.—"Maassnahmen zur Ergänzung der durch Unterbringung in Heilstätten geübten Fürsorge für Lungenkranke."

44 *Rapid Test of Quantity of Uric Acid in Urine. I. Ruhemann. "Eine einfache Methode zur sofortigen quantitativen Bestimmung der Harnsäure im Urin." (Concluded from No. 2.)

### Centralblatt f. Bakteriologie (Jena), January 8.

45 *Mechanical Protection Against Infection. O. Kausch.—"Verfahren und Apparate zum Schutze gegen Infektion."

### Centralblatt f. Chirurgie (Leipsic), February 1.

46 *Progress in the Domain of Finsen's Treatment of Lupus. Kattenbracker.—"Fortschritte auf dem Gebiete der Finsen'schen Lupusbehandlung."

### Centralblatt f. Gynaekologie (Leipsic), January 18.

47 Median Incision of the Uterus in Total Extirpation. Krönig.—"Die mediane Spaltung des Uterus bei der vag. u. abd. Totalextirpation desselben."

48 *Topography of Uterus and Bladder After Alexander-Adams Operation. G. Bulius.—"Zur Top. des Uterus und der Blase nach Alexander-Adams Operation."

49 *Nature of Dysmenorrhea. A. Theilhaber.—"Das Wesen der Dysmenorrhoe."

### Deutsche Med. Wochenschrift (Leipsic), January 30.

50 Changes in the Blood in Case of Intoxication with Benzine Bodies. L. Mohr.—"Ueber Blutveränderungen bei Vergiftungen mit Benzolkörpern."

51 *The Nature of Fever. E. Aronsohn.—"Das Wesen des Fiebers."

52 *The Alkalinity of the Blood in Disease and the Alkali Tension. Brandenburg.—"Ueber Alkaleszenz und Alkalispannung des Blutes in Krankheiten."

### Mitteilungen a. d. Grenzgebieten (Jena), ix, 1 and 2, 1902.

53 *Exophthalmic Goiter. Albert Kocher.—"Ueber Morbus Basedowi."

### Muenchener Med. Wochenschrift, February 4.

54 *The Dangers of Taxis. O. Lanz.—"Weg mit der Taxis."

55 *Injuries from Powerful Electric Current. F. Jessen.—"Zur Kenntniss der Starkstromverletzungen."

56 *Treatment of Hemoptysis by Subcutaneous Injections of Gelatin. L. Thieme.—"Zur Behandlung der Lungenblutungen mit subkutanen Gelatineinjectionen."

57 *Treatment of Chronic Dry Catarrh of the Middle Ear by the Pneumatic Cabinet. Hamm.—"Die Behandlung des chronischen trockenen Mittelohrkatarrhs durch Sitzungen in der pneumatischen Kammer."

58 Escape of Hemoglobin from Blood Corpuscles Hardened by Sublimate. H. Sachs.—"Ueber den Austritt des Haemoglobins aus sublimatgehärteten Blutkörperchen."

59 *Lowering the Pelvis in Operations on the Biliary Passages. W. Ruehl.—"Ueber steile Becken-Tieflagerung bei Operationen an den Gallengängen."

60 Myelopathic Albumosuria. T. R. Bradshaw.—"Myelopathische Albumosurie."

### Pflueger's Archiv f. d. Ges. Phys. (Bonn), lxxxviii, 12.

61 The Anatomy and Physiology of the Labyrinth of the Dancing Mouse. G. Alexander and A. Kreidl.—"Anat.-phys. Studien über das Ohrlabyrinth der Tanzmaus."

62 Study of the Frog's Heart. M. v. Vintschgau.—"Elekt. u. mech. Reizung des unversehrten Froschherzens u. nach einer linearen Längsquetschung."

63 *Chromic Acid Diabetes. J. Kossa.—"Ueber Chromsäure Diabetes."

### Wiener Klin. Rundschau, January 26.

64 Indications for Radical Operations in Cases of Chronic Empyema of the Maxillary Sinus. M. Hajek.—"Ueber die Radicaloperationen und ihre Indicationen bei chronischem Empyem der Kieferhöhle."

### Wiener Klin. Wochenschrift, January 30.

65 *Carcinoma and Malaria. L. Prochnik.—"Carcinom und Malaria."

66 Bacteriohemagglutinins and Antihemagglutinins. R. Kraus.—"Ueber Bacteriohämmagglutinine und Antihämagglutinine."

67 *A New Differentiating Reaction of Human Milk. E. Moro and F. Hamburger.—"Ueber eine neue Reaction der Menschenmilch. Ein Beitrag z. Kenntniss der Unterschiede zwischen Menschenmilch und Kuhmilch."

68 Keratosis Nigricans. S. Grosz. "Ueber Keratosis nigricans."

### Janus (Amsterdam), January.

69 Was the Plague of Thucydides the Bubonic Plague? W. Ebstein.—"Ob es sich bei der Pest des Thukydides um die Bubonenpest gehandelt hat?"

70 *Ship Physicians in the Byzantine Epoch. I. Bloch.—"Schiffsaerzte in byzantinischer Zeit."

71 Rupture Operators, Lithotomists and Oculists of the Preceding Centuries. V. Fossel.—"Bruchschneider, Lithotomen und Oculisten in früherer Zeit."

72 *Origin of Syphilis. B. Scheube.—"Ueber den Ursprung der Syphilis."

### Gazzetta Degli Ospedali (Milan), January 19 and 26.

73 *Value of the Gelatinized Urine Method of Bacteriologic Diagnosis of Typhoid. F. Strada.—"Sul valore del metodo Piorkowsky nella diagnosi bacteriologica del tifo addominale."

74 *Treatment of Arteriosclerosis with Trunecek's Inorganic Serum. Zanoni and Lattes.—"Alcuni risultati di cure dell' arteriosclerosi col siero inorganico di Trunecek."

75 *Treatment of Trigeminal Neuralgia by Resection of the Cervical Sympathetic. G. Cavazzani.—"Contributo alla cura delle nevralgie del trigemino colla resezione del simpatico cervicale."

### Riforma Medica (Rome), January 2, 3, 4 and 7.

76 *The Action of Antiperiodic Drugs on the Malarial Parasite. D. Lo Monaco and L. Panichi.—"L'azione dei farmaci antiperiodici sul parassita della malaria."

77 *New Method of Isolating the Typhoid Bacillus. L. Biffi.—"Su di un nuovo metodo d'isolamento del bacillo del tifo."

78 The Auto-Neuro-Therapeutic Method in Bronchial Asthma. B. de Luca. "Il metodo auto-neuro-terapico nell' asma bronchiale."

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4. **Gastric Ulcer.**—Box holds to the infective theory of gastric ulcer; in any part of the intestine below the duodenum the infective nature of the ulceration has been accepted. Therefore, the same might reasonably be supposed to hold for gastric ulcer. It is not uncommon to find multiple ulceration both in the stomach and duodenum and so placed, either opposite or so close to each other, that infection from one to the other may have easily occurred. The appearance of a recent acute ulcer at the time of the operation for perforation is itself highly suggestive and this first led him to the infection theory. There is a zone of highly edematous and softened tissue surrounding it. This is not present in every perforated ulcer, for there is a form which he calls secondary which is due either to the rent of the thin peritoneal base or the tearing of an old adhesion, uniting such an ulcer to the surrounding tissue. This may be due to overdistension of the stomach or some unwonted muscular exertion, etc. We must, therefore, modify our views of gastric ulcer somewhat and admit the widespread inflammatory condition in some cases. He thinks the following points

should be borne in mind in the investigation of supposed gastric ulcer: "1. The patient's statements as to the occurrence of hematemesis should be received with due reserve, and corroborative particulars inquired for. 2. In doubtful cases it is necessary to see the vomited materials oneself if this be possible, and better still to observe or have observed the actual act of vomiting. 3. In all cases the urine examination should be a routine procedure. This examination should be thorough, and include the search for casts as well as for albumin. A single examination is often not enough. 4. The eyes should be always examined, particularly with a view to the presence of the normal light reflex, and the occurrence of changes in the fundus. Optic atrophy may put us on the track of locomotor ataxia; the presence of optic neuritis may reveal an unsuspected cerebral tumor, and the presence of neuro-retinitis may indicate renal disease. 5. An examination of the stomach contents for the presence of excess of free HCl should always, where practicable, be made. And if the first examination be negative a second should be undertaken before being positive as to its absence. Hyperacidity is a valuable, although not absolutely constant, sign of gastric ulceration. 6. Every patient in whom gastric ulcer is diagnosed should be looked upon as seriously ill. The disease is commonly treated much too lightly, considering its liability to such serious and fatal complications. I believe that prolonged rest in bed and proper dieting for some time is essential in all early cases."

5. **Malignant Intestinal Obstruction.**—Bidwell confines his remarks mainly to obstructions in the ascending and transverse colon, and remarks that in operation the use of the Murphy button should be avoided. In anastomosis between the ileum and colon he would open the abdomen in the middle line, introduce two fingers and explore the sigmoid to find whether it is dilated. If dilated follow it down with the finger until the obstruction is felt. If this is movable and capable of being brought outside the abdomen its removal should be attempted, but if it is too low down or fixed by adhesion, colotomy is required. In either case another incision should be made in the lower iliac region. In the case of a movable growth it should be brought out through the second incision and great assistance is obtained by using the fingers of the other hand inserted in the abdomen through the median incision. "When the growth and knuckle of the sigmoid have been prolapsed through the wound the gut should be divided above the stricture and a Paul's tube inserted and tied into the lower end of the descending colon. The sigmoid is then divided below the growth and a small Paul's tube inserted; a wedge-shaped piece of mesentery is now removed in which some enlarged gland may be found. The two portions of the intestine, viz., the lower part of the ascending (?) colon and the lower part of the sigmoid, are then united together with five or six silk sutures so as to bring a considerable amount of their serous surface into apposition, thus paving the way for the closure of the artificial anus." If the growth is immovable or too low down colostomy is performed, and in this case he employs the following method to prevent the passing of the feces toward the rectum: "After the peritoneum has been sutured to the skin in the ordinary way a portion of the sigmoid is prolapsed, and a hole is torn in the meso-sigmoid; the two edges of the skin nearly at the center of the incision are then brought together within the rent of the meso-sigmoid so that when the operation is completed the upper and lower openings of the bowel are separated by a bridge of skin about half an inch wide. Two stout silk ligatures are then passed through the hole in the meso-sigmoid, and an incision having been made into the loop above its center, a Paul's glass is inserted and tied in with one of these ligatures. The lower end of the gut is also tightly ligatured with the one piece of silk. The loop of gut between this ligature and the part where the glass tube is tied in will slough away at the end of a few days, and the tube itself will fall off, leaving the two openings completely separated and flush with the incision. If the sigmoid should be found to be empty it is best immediately to examine the cecum. In the very few cases in which the obstruction is situated in the small intestine the cecum, of course, will also be collapsed, and the ileum leading to it will be empty. In these cases it will be necessary to follow up the collapsed portion until the seat of the obstruction is reached. This is best done by bringing the contracted portion outside the abdomen, and returning it as soon as the growth has been reached and brought into view. When dealing with the small intestine, removal of the growth, followed by a primary end-to-end anastomosis, is the best treatment, the anastomosis being completed with sutures or possibly with a Murphy button." He has never removed the growth in the small intestine, but in several cases of acute obstruction, leading to gangrene, he has been obliged to do a primary resection, and in three of these the result was perfectly satisfactory. If the growth is situated in the cecum it will be felt at once. The small intestine will be gradually distended while its walls are considerably thickened. If the cecum is freely movable and is not bound down by adhesions it should be treated in the same way as the sigmoid, that is, brought out after another incision has been made, and the growth cut away after tubes have been tied in the ileum and ascending colon. The fecal fistula will be closed later by an anastomosis between the ileum and the ascending colon or this anastomosis may be made at once, leaving the removal of the growth until the patient is recovered from the effects of the obstruction. This method, however, he does not recommend. The above applies to movable tumors. If the growth is immovable only palliative treatment is indicated. He does not recommend an artificial anus at the cecum in these cases, but anastomosis by the above method of the ileum with the sigmoid is preferable. He reports several cases, and concludes that colostomy should never be performed for any growth which is situated above the middle of the sigmoid flexure, and that an artificial anus formed in such a case should be only a temporary one left after the removal of the growth and subsequently to be closed by ileo-sigmoidostomy.

7. **Optic Neuritis.**—The object of Hawthorne's article is to support the view that double optic neuritis, occurring in a patient the subject of chlorosis, is due to intracranial thrombosis. The case observed, in which the ocular paralysis was associated with double optic neuritis, raised with him the question whether the latter occurring alone with chlorosis was due to the same cause. In his case the ocular paralysis and ocular neuritis were undoubtedly, he thinks, due to a common cause. There is one condition, namely, intracranial thrombosis, capable to produce them, and from this he reasons that when unattended by ocular or other evidences of cerebral disturbances the occurrence of optic neuritis in chlorosis is also to be referred to cerebral thrombosis. That thrombosis is to be numbered among the possible complications from chlorosis is not in question. Professor Welch has collected 82 cases and believes more could be gathered by a thorough overhauling of the literature. Chlorosis, he says, "must be given a leading place among the causes of spontaneous thrombosis of the cerebral veins and sinuses in women." It is certain that double optic neuritis may be connected with the symptoms of such thrombosis, and Hawthorne quotes various authorities to prove this. The arguments may, therefore, be briefly presented as follows: "The simultaneous occurrence of the optic neuritis and sixth nerve paralysis suggests a common origin; the nature and temporary duration of the two events make it difficult to imagine any single cause capable of producing them other than an intracranial lesion; an intracranial thrombosis may certainly produce them; intracranial thrombosis is a recognized possibility in chlorosis; the patient is the subject of chlorosis: therefore it may be concluded with a considerable measure of confidence that both the optic neuritis and the sixth nerve paralysis were due to intracranial thrombosis. From such a conclusion, it is but a step to the proposition that thrombosis is probably the cause of optic neuritis when this occurs in chlorosis apart from other incidents having a possibly cerebral origin. The invitation to take that step is rendered more pressing when it is perceived that from cases of chlorosis with optic neuritis and severe cerebral disturbances a series of cases of gradually diminishing severity can be traced downward to the instances in which chlorosis is complicated by optic neuritis as the single event having thrombosis as the possible interpre

tation. At one extreme are fatal cases in which delirium, coma, hemiplegia and double optic neuritis have been shown by necropsy to be associated with thrombosis of the intracranial veins and sinuses; following these are instances of less severe, though considerable, cerebral disturbance, with optic neuritis and evidences of thrombosis in the veins of the limbs or other parts of the body; these are succeeded by examples of chlorosis with headache more than usually extreme, more or less vomiting, and an ocular paralysis; next may be placed cases—like the one reported with this paper—in which the symptomatic disturbances other than those common in chlorosis are restricted to an ocular paralysis and double optic neuritis; and last of all are those in which the optic neuritis is the sole unusual event. Such a gradation is certainly an impressive one, and may reasonably be presented in support of the proposition that in these different groups we have to deal with different degrees of severity and extent of one and the same pathological process, and that the pathological event underlying them all is a thrombosis of the intracranial sinuses and veins." Another series of evidences which he thinks supports these views is the occurrence of optic neuritis in ear disease, and the optic neuritis developing after a considerable hemorrhage. As to the mechanism it is not necessary to assume that to produce optic neuritis a thrombosis must be so situated as to interfere with the venous return of the eyeball. A thrombus once formed is for all practical purposes a tumor in that it is a foreign body within the skull. Whatever conflict of opinion may yet exist about the manner in which cerebral tumors cause optic neuritis it is certain that neither the size nor the position of the tumor is the determining factor. A thrombus, therefore, he thinks, behaves as other forms of tumors and produces the symptoms which we would observe in connection with cerebral tumor. The principal deductions he draws are that there is probably cardiac weakness, a sluggish state of the circulation and that the immediate risks are that the thrombus will grow over a larger area and that a portion will become detached and lead to embolism. To prevent the latter result complete rest is imperative, but we should take steps at the same time to keep up the vigor of the circulation so as not to favor the extension of the thrombus and, therefore, it would be wise to supplement the administration of iron with cardiac tonics as digitalis and diffuse stimulants, more particularly ammonia. After the above measures have assured with reasonable certainty that the danger of extension of the thrombus is probably over we should try to increase the vigor of the vital processes by moderate exercise.

14. **Word-Blindness.**—Hinshelwood reports several interesting cases of word-blindness, in one of which, in an educated man, there was a complete aphasia, both motor and sensory, but a gradual improvement occurred so that in about a week he could express his ideas. There was a trace of auditory aphasia still left, but word-blindness was the most prominent symptom. There was no letter blindness. Of the four languages which he read, Greek, Latin, French and English, his knowledge of Greek was complete; in Latin he was a little less perfect; in French he was better than in English, and in his mother tongue he was the least perfect. There was evidence or suspicion of a specific disease, and he was put upon specific treatment, with the result of a very pronounced improvement in all respects, though there still remains apparently some traces of the difficulty in reading English. It requires greater mental concentration, he says, to read English than to read Greek or Latin. While this is the first case Hinshelwood met with the different degrees of word-blindness in different languages, he has met with a case where the patient was word-deaf to one language and not to another. In two of the cases reported the word-blindness was associated with right lateral homonymous hemianopsia, in one case temporary, in the other permanent. In three of the four cases there was recovery; in one the word-blindness persisted. The recovery will depend on whether the centers or the fibers leading to it have been destroyed, in which case the loss will be permanent, or whether its function has only been suspended by its blood supply being interfered with, either by pressure of a growth or by hemorrhage, or by an occlusion of a cerebral vessel by a thrombus or embolism. With no actual destruction of cerebral tissue recovery may take place, but one can never say whether the loss will be permanent. If there is any suspicion of a syphilitic taint, specific treatment should be employed. In cases of permanent destruction of the visual memories or words or letters re-education is the only resort. This should not be begun as long as there are any traces of active cerebral disease present. The chances of success will be greater with young patients. He holds, and thinks these patients prove the truth of his published statement "that all the varieties of word-blindness met with in clinical experience can be intelligently explained by regarding them as disorders of the visual memory produced by lesions affecting more or less completely a definite area of the cerebral cortex in which are preserved these past visual impressions arranged in definite and ordered groups."

16. **Acute Suffocating Pulmonary Edema.**—Lissaman reports a case of this kind in which he tried nitrite of amyl with unsatisfactory results. He then tentatively employed chloroform with the best of success. He holds that in this condition, which might be called a sort of wet asthma, the lungs are, perhaps, in a similar condition to the extremities in certain forms of erythromelalgia, and relies on chloroform as the remedy in the future.

17. **Auscultation.**—Syers claims that the use of the binaural stethoscope is damaging to correct auscultation and that the instrument is unreliable as regards the investigation of the heart sounds, and that if its popularity is continues, at least aortic regurgitation will be a disease which can not be certainly diagnosed. He maintains that many cases of this sort are overlooked through the unsuitability of the instrument in the hands of the examiner. The soft low pitched murmur due to incompetent aortic valves is inaudible or unnoticeable by this instrument. He also holds that in lung examination beginners who use this instrument never really appreciate the difference between bronchial, tubular and cavernous breathing. Another objection to it is the compression of the delicate organs of hearing by the ivory heads and the unyielding spring of the binaural stethoscope. This pressure kept up intermittently for long periods for hours, as is the case with house surgeons and others, may be most injurious to the hearing of the observer. He does not deny that the instrument has a certain value. It is convenient in illnesses which render it difficult to move the patient in a manner suitable for examination by the wooden stethoscope, but here it is only an accessory, needed for particular occasions and special needs. What he protests against and in the strongest possible manner, is the predilection shown for the binaural stethoscope by the young student who is allowed to make use of it at the very commencement of his clinical work so that he is totally unable to appreciate the advantages of the old-fashioned instrument. This he has found the cause of much of the indifferent diagnosis of chest diseases so often observed at the present time.

18. **Fourth Disease.**—Ker discusses the symptoms in measles, German measles, and scarlet fever, with special reference to the occurrence of the "fourth disease" described by Dr. Dukes. The conclusion which he reaches is that, while he had accepted its occurrence previously and endeavored to find facts to support the claim, after eighteen months and in face of the criticisms on the subject he feels only one verdict is possible regarding the contention of Dr. Dukes. It is, namely, the Scottish one, of "not proven."

20. **Auscultatory Percussion.**—Habersohn's article is a plea for the greater use of auscultatory percussion, which he thinks is neglected by the profession; while it has its limitations and its value may be exaggerated, he thinks it is a physical sign which should never be ignored.

21. **Floating Kidney.**—Hutchinson does not find sufficient evidence of the hepato-renal bands of peritoneum described by Weisker to account for the obstructive jaundice produced in certain cases. He thinks that jaundice may be caused, either by downward displacement of the duodenum with stretching of

the common bile-duct, by displacement of the gall-bladder and sharp kinking of the cystic duct, or by torsion of the vertical part of the duodenum and perhaps even of the bile-duct, and that in one of these conditions an explanation is usually to be found, and not in traction through bands of the peritoneal investment of the right kidney connecting it with the liver. The latter may possibly be the fact in certain cases, but he has not found convincing evidence of it where he has been able to investigate.

22. **Uremic Ulcerations of Stomach and Small Intestine.**—Mathieu states that the prognosis of uremic ulcerations in the intestines is always grave, but healed lesions have been found at autopsies, showing that recovery may occur. He has been able to find 22 cases in the literature; 12 of the 20, in which the age was mentioned, were between 18 and 24 and one was 14. Pain is rare and diarrhea the rule, but in a personal case, pain was intense and the patient constipated. She was a young woman presenting the clinical picture of chronic Bright's disease, hypertrophy of the heart and bruit de galop. Five small ulcerations were found in the stomach, corresponding to similar lesions in the intestines, and also a large ulcer with all the characteristics of simple gastric ulcer. All the lesions in the stomach were evidently recent. They had been unaccompanied by any of the usual symptoms of gastric ulcer. He believes that this is the first case of the kind on record.

26. **The Hospitals of St. Petersburg.**—Marcou speaks with envy of the management of the St. Petersburg hospitals, which are entirely under the charge of medical men. The attendants are trained nurses and the wards are kept clean by expert cleaners. All appointments are entirely free from politics. There are 169 hospitals and medical institutions and nearly $17,000,000 is spent annually on the care of the sick and poor.

27. See editorial in this issue.

28. **Treatment of Club-Foot by Ablation of All the Tarsal Bones Without Immobilization or Apparatus.**—Lucas-Championnière has treated 31 cases of club-foot by a method which has proved uniformly successful in his experience extending over a period of thirteen years. He thinks that it is much more important to conserve the muscles and tendons than the tarsal bones, which are all more or less altered in shape and size and displaced in a club-foot. Through a single incision in the dorsum of the foot, he removes the astragalus, scaphoid, cuboid and the three cuneiform bones and sometimes the rear end of the fifth metatarsal bone. The posterior third of the calcaneum is all that is left, and sometimes only the insertion of the tendo Achillis. This resection of both groups of the tarsal bones enables the foot to be modeled into a good shape. The metatarsus fits against the remainder of the calcaneum, thus shortening the foot somewhat. The worst deformities can thus be completely corrected and the foot restored to normal appearance and function. No orthopedic apparatus of any kind is applied. The subject wears an ordinary shoe, or one made a little more solid than usual. Mobilization is commenced the fourth day, and the patient commences to use his foot the third to the sixth week. Of all the methods of correcting club-foot in vogue, this is the simplest and the surest, under thorough antisepsis. The patient presented at the Academie was a man 31 years of age. One foot had been operated on with complete success the year before, and the other was soon to be treated in the same way.

29. **Modifications of the Reflexes of Traumatisms of the Spine.**—Lambret describes the case of a young man whose spinal cord had been severed by a bullet near the fifth dorsal. There was complete anesthesia and motor paralysis below the nipple line, and the reflexes in the legs were abolished except for a very slight flexion of the toes when the sole was stimulated. The slight persistence of this reflex shows that Bastian's law is too absolute. In another case, mere compression of the spinal cord by a small exudation completely abolished the reflexes of the legs. These and other facts which he cites sustain his assertions that the brain participates to a considerable extent in the production of normal reflexes.

30. **Chronic Splenomegalia.**—Delcarde classifies chronic splenomegalia as primary and secondary. Tuberculosis may induce either form and, besides the classic symptoms common to all cases of chronic splenomegalia, there may be an excess of blood corpuscles and cyanosis. Three cases of this kind are on record. In one there were eight to nine millions of reds, but they were not deformed nor nucleated. Vaillard suggests that this hyperglobulia may be due to the loss of the spleen function which normally destroys the excess of corpuscles. The spleen is very large in syphilis neonatorum, but subsides to normal size by the third to the fourth month. It is also hypertrophied in the first period of acquired syphilis and this condition may persist into the second stage. The diagnosis of the different forms of the lymphogenic diathesis depends principally on the blood count and the exclusion of tuberculosis, syphilis and acute infections affecting the adjacent organs. Treatment has been occasionally successful with the iodids, mercury, phosphorus, arsenic or tonics in certain cases, and it is advisable to try one after the other. Hayem gives the preference to arsenic. Organ treatment of leukemia with spleen and lymphatic extract has not been successful to date. Surgical interventon is absolutely contra-indicated in the various forms of leukemia, but may be required in chronic malaria. In leukemia, syphilis, tuberculosis and liver affections, splenectomy does not induce any improvement but rather seems to hasten the fatal termination.

35. **Traumatic Scarlet Fever.**—De Bovis has collected 147 cases of traumatic scarlet fever; 80 per cent. of the patients were under 15 years of age and two-thirds of the total number were males. Many of these cases were evidently merely ordinary scarlet fever occurring in a person who had been wounded in some way, but a large proportion remains in which the scarlet fever was evidently the direct result of the traumatism. This form differs from the first by its shorter incubation, the insignificance of the sore throat, the smaller proportion of young children and the earlier appearance of desquamation, but more than all by the development and spread of the eruption. It usually starts in the peripheral wound and thence spreads like a lymphangitis, finally invading the entire cutaneous surface. This course is extremely abnormal if we assume that the infection occurs by the usual routes, but it is easily explained by the penetration of the scarlet fever germs through the portal of entry afforded by the wound. The scarlet fever in this case is inoculated. It may transmit the disease and start an epidemic. A traumatism evidently engenders a peculiar receptivity to scarlet fever infection, which surgeons should bear in mind in operating after contact with scarlet fever patients.

40. **Organotherapy of Pancreatogenic Fatty Diarrhea.**—Salomon, assistant at von Noorden's clinic, reports the successful administration of a preparation of pancreas substance in two cases of fatty stools associated with diabetes. There are scarcely twenty-four such cases on record. The pancreas must be totally impotent, with entire loss of its secretory function, or else the pancreatic juice must be completely shut off from the intestines. In either case, organotherapy promises benefit, and administration of pancreas substance has been successful in the experience of von Noorden, Pribram and others. Pankreatin (Rhenania) and pankreon were even more effective than the gland substance, while far more convenient.

42. **Connection Between Psoriasis and Glycosuria.**—Pick examined 50 patients with psoriasis and 50 with other cutaneous affections for alimentary glycosuria after ingestion of 100 gm. of grape sugar. He found it in only 2 of the first group and in 3 of the second.

44. **Rapid Test of Quantity of Uric Acid in Urine.**—Ruhemann's test is based on the principle that iodin is neutralized by a certain proportion of uric acid until the brown color vanishes completely. He has calculated the exact amount of each necessary to determine the percentage of uric acid in a given amount of urine, and established a graduated scale. He calls the test tube and stopper graduated for this scale the "uricometer," and states that this quantitative test is simple,

reliable and can be made by any physician. The test is complete in thirty to forty minutes when the yellowish fluid formed by the mixture of iodin and urine has turned a milky white. Study of this reaction suggests that possibly drugs which readily and rapidly decompose iodin in the organism might be beneficial in gout and the uric acid diathesis, to increase the solubility of uric acid and the urates. Lithium iodid takes the lead in this respect. Iodin appears promptly in the urine when it is administered. He gives it in pills with bolus alba, commencing with 15 to 20 cg. three times a day after meals. It can also be administered in a subcutaneous injection in the vicinity of the point affected. The elimination of uric acid increases under its influence and it can be long continued, even at the same time as colchicin during the attacks. "For this and other reasons it is superior to urotropin and all other drugs recommended for gout."

45. **Mechanical Protection Against Infection.**—The formula of the varnish recommended as a covering for the hands by Kausch, is 200 parts resin; 200 parts absolute alcohol; 400 parts ether (sp. gr. .725), and 20 parts castor oil. He illustrates an apparatus for spreading it evenly on the hands.

46. **Improvements in Treatment of Lupus by Finsen's Method.**—Kattenbracker discusses the bactericidal action of the Kjeldsen portable iron therapeutic lamp, constructed on the same principle as those mentioned in THE JOURNAL of Feb. 8, 1902. He found that an exposure of one to sixty seconds enfeebled bacteria so that their further growth was much checked. In some of his tests the typhoid bacillus made no growth after a sixty seconds' exposure and the anthrax bacillus after thirty seconds. The cultures were all superficial. He concludes that these iron lamps constitute an improvement in light treatment of all kinds of skin diseases as they accomplish in three minutes with 5 amperes what is only possible with the Finsen apparatus with 70 or 80 amperes in an hour and with the constant aid of an attendant.

48. **Topography of Uterus and Bladder After Alexander-Adams Operation.**—Bulius found that the round ligaments retained or regained their complete functional capacity after this operation in three cases investigated. Their perfect function was best observed as the distended bladder was evacuated with a catheter.

49. **Nature of Dysmenorrhea.**—Theilhaber adds the following arguments to his previous statements in regard to the tetanic contraction of the circular muscles which he believes is the nature of the dysmenorrhea in certain cases: 1, the pain disappears after birth of first child; 2, the pain appears twelve to twenty-four hours before the menstrual flow commences, and the acme of the pains has passed before coagula form; 3, the pain is continuous, not intermittent like labor pains or those that occur in case of submucous myomata or perimetritis; 4, resection of the sphincter of the internal os cures the dysmenorrhea.

51. **The Nature of Fever.**—Aronsohn has continued his studies of the essence of fever and describes a number of interesting experiments on animals which seem to establish that fever is due to a morbidly exaggerated stimulation or irritation of the heat centers. The irritated centers incite the motor trophic apparatus of the muscles, including the muscles of the vessels, to increased production of heat and also to increased metabolism and alterations in the elimination of heat. The various types of fever are determined by the varying kinds of irritation brought to bear on the heat centers in the course of infectious diseases. This irritation is evidently multiple in its nature, and other centers in the brain and other organs are liable to be influenced at the same time. The fundamental type of fever, however, is the elevation of temperature induced by direct mechanical, electric or chemical stimulation of the heat centers in the absence of any morbid process in the organism. After inducing fever by puncture of the heat center in an animal, he excluded the muscles by paralyzing the intramuscular terminals of the motor nerves with curare. The temperature dropped at once by 0.23 Centigrade. The decrease in the temperature is much more marked after curarizing in febrile than in normal animals. In tests on starving dogs he found that the temperature did not rise so high after puncture of the heat center as in normal dogs, and it remained below the fever limit. He found that it was possible to induce these high temperatures in animals on puncture of the heat center even after almost all the blood had been substituted by physiologic saline solution. This established that the blood could not be the seat of the heat production. The fact that the glandular system rests during sleep testifies that it can not be responsible for the heat production during fever. Ito has demonstrated that the liver has nothing to do with it. He holds the pancreas responsible, but his arguments are not conclusive, while Aronsohn has shown that the muscles generate fever heat even after the temperature in the rectum has fallen to normal, and commence to generate it before the rectal temperature rises.

52. **The Alkalinity of the Blood in Disease.**—Brandenburg calls attention to the fact that alkali occurs in the blood under two forms, that combined with carbon dioxid and that combined with albumin. The albumin compounds are very tenacious of their alkali and the two forms can be distinguished by their capacity for diffusion. If a parchment tube is prepared with a solution of sodium for dialysis and suspended in a glass of water, the alkali in the tube gradually diffuses through it until the concentration of the alkali on the inner and outer walls of the tube is the same. If blood be used instead of the solution of sodium, the amount of concentration on the inner and outer walls never becomes equalized, no matter how long the tube hangs in the water. The alkali bound in the combination with albumin does not diffuse. It is possible to use an alkaline solution instead of water for this test, the concentration so graduated that the blood neither loses nor gains alkali. The amount of concentration in the external fluid can then be accepted as the index of the amount of "alkali tension" of the blood. This "alkali tension" is thus a new means of estimating the properties of the blood, and will supplement the determination of the amount of albumin in it and the freezing-point. There seems to be a certain proportion between the alkali tension and the freezing-point. The alkali tension does not vary much from a certain standard, notwithstanding the fact that the total alkalinity of the blood may range within such wide limits without symptoms. In the serum, the alkali is about evenly divided between the bound and the diffusible form. In anemia about 33 per cent. of the total alkali is diffusible. The proportion is therefore dependent on the amount of albumin in the blood. The higher the total alkalinity, the lower the percentage of diffusible alkali, and *vice versa*, but the alkali tension remains approximately the same throughout. Possibly in the disturbances in metabolism, the acid intoxications, the chief symptoms may be due to the variations which they induce in the alkali tension. Brandenburg believes that the freezing-point is directly dependent on the amount of diffusible alkali in the blood, aside from cases of retention in consequence of contracted kidney, etc. The wide variations in the alkalinity of the blood with the comparatively insignificant clinical manifestations, suggest that it is not particularly important from a biologic view-point. But the constant value of the alkali tension suggests that it may be of moment to the vital processes, and should hence be taken into consideration in diagnosing disease. Recent research has shown that the bactericidal properties of blood are enhanced by increasing the amount of diffusible alkali in it. Hamburger found that after determining the bactericidal power of a blood, the addition of carbon dioxid releases the alkali from the albumin, increasing the proportion of diffusible alkali, and thus raises the alkali tension and has a marked effect in augmenting the bactericidal properties of the blood. The addition of an alkaline solution to the blood scarcely affects the alkali tension, as part of the alkali unites with the albuminoids, and the proportion between the bound and the diffusible alkali remains about the same. In normal blood about 20 per cent. of the total alkali is diffusible.

53. **Exophthalmic Goiter.**—Kocher's communication fills the entire 304 pages of this issue of the *Grenzgebiete*, and con-

cludes with a bibliography of 1423 titles. He describes his experiences with 93 cases of this disease since 1887, all treated on the same principle, that is, to put an end to the excessive vascularization of the thyroid gland with the smallest possible resection of tissue. He operated on 59, which is more than a seventh of all the operated cases of the disease previously on record. Of this number of 59, 45 are permanently cured, with in many cases not a trace of the former troubles to be detected; 8 are much improved, 2 slightly improved and 4 have died. When the operation succeeded in permanently modifying the excessive vascularization of the gland, the cure was rapid and complete. This occurred in 75 per cent. of all the cases. Only the hypervascular portion of the struma is important in this respect. The aim is to limit the supply of blood to the gland. Ligature of both superior arteries is an insignificant measure, but ligature of the afferent arteries and partial excision is effective in even the severest cases. Unilateral excision causes less hemorrhage than the bilateral. Kocher always proceeds gradually, watching the progress of the case, ready to operate more extensively if conditions require it, but he found that the desired results were accomplished in most cases by partial operations. The remainder of the gland spontaneously subsided in many instances, rendering further intervention unnecessary. In view of the favorable results he has attained, he counsels operation at once in every case, without wasting time on internal treatment. The operator should always avoid general anesthesia, and remember that the main point is scrupulously minute hemostasis. He asserts that it is well demonstrated that treatment with iodin has actually aggravated many incipient cases. Thyroid treatment is harmless. Hydrotherapy is always beneficial, and he always orders it in preparing his patients for an operation. Of his 93 cases, 37 were extremely severe; 22 well developed cases; 14 were cases of struma vasculosa (9 were operated on); 2 of a "pseudo-Basedow" (both operated), and 4 of transient. The exophthalmus vanished completely in only 26 of his 45 completely cured cases. In the others it persisted in a slight degree, probably owing to the anatomic alterations induced by the morbid process previous to the operation.

54. **Dangers of Taxis.**—Lanz has witnessed several cases in which an incarcerated hernia was reduced without much difficulty, but the results were disastrous. Some terminated fatally and others required an operation at once. Even when reduction was easy, a predisposition had been acquired, and the recurrence of the incarceration was in most cases only a question of time, with an operation required sooner or later. He has become convinced that taxis is below the level of modern science, and should be definitely discarded. An early herniotomy meets with much more favorable conditions for success than when the parts have been irritated by attempts at reduction. The narcosis induced for the taxis should be utilized for the herniotomy instead, or the latter be performed under local anesthesia with Schleich's solution. Lanz has had occasion to successfully perform a herniotomy on three children a few weeks old. He describes a number of instances of chronic ileus, perforation and peritonitis, which followed an unfortunately too successful taxis, and states that herniotomy should be proposed at once when the physician is summoned to an incarcerated hernia.

55. **Injuries from Powerful Electric Currents.**—Jessen reviews the list of such injuries on record and describes a personal case. All the symptoms suggest the possibility that the powerful current causes certain minute alterations in the brain like those observed in dogs under similar conditions. These induce the transient symptoms which indicate an organic lesion, although the symptoms in general are of a purely functional nature with hysteric features. All writers are unanimous in lauding the benefits of artificial respiration. D'Arsonval was able to resuscitate in this way a man who had been unconscious for hours after a current of 4500 volts had passed from hand to seat. Eulenburg observed a case of severe progressive epilepsy, followed by paralysis and blindness, in a man of 48 who had received a current of 500 volts.

56. **Treatment of Hemoptysis with Subcutaneous Injection of Gelatin.**—Thieme was much pleased with the results of the injection of 100 c.c. of a 2 per cent. solution of gelatin in 12 severe cases of hemorrhage from the lungs. The injection was made in the thigh, the part lightly massaged afterward. The temperature rose in all the patients except one, the maximum between 37.6 and 38.9 C. One patient had a temperature of 40.3 to 40.7 C. for five days. Another had been febrile for a long time, but the temperature dropped to normal when the hemorrhage occurred and the patient was dismissed later clinically cured. Only one of the patients succumbed to the hemorrhage. He renders the solution slightly alkaline with soda.

57. **Treatment of Dry Catarrh of the Middle Ear in the Pneumatic Cabinet.**—Hamm has utilized the pneumatic cabinet as a means of treating deafness from sclerosis of the middle ear. Transient improvement was noted in all the cases and 3 were very much improved. One was a young man who before treatment could not hear the ticking of a watch nor a whisper, and the speaking voice only at 26 cm. by the right and 17 cm. by the left ear. After treatment, he could hear a whisper at 148 cm. with one, and at 12 cm. with the other ear and the speaking voice at 600 cm. with the right, and 65 with the left ear. This great improvement was not maintained, but the hearing remained permanently very much improved. Another patient before treatment could hear the speaking voice only at 260 and 130 cm. After six weeks of daily seances in the pneumatic cabinet, he could hear the speaking voice at 6 meters and a whisper at 200 cm. He had been under various kinds of treatment before with no benefit. Hamm himself had suffered for eight years from chronic otitis of the middle ear, rebellious to all treatment. He could hear a whisper only at 14 cm. and 5 cm. before, but after treatment, at 130 cm. and 32 cm. This improvement yielded somewhat in consequence of repeated colds, but a new series of seances restored it to the same point, where it has permanently remained. He could not hear so well inside the cabinet, while one patient could hear much better than at other times. Each seance lasted one and one-half hours. The pressure was gradually increased during twenty-five minutes and then reduced during the last forty. It was graduated to .5, 1 and 1.5 atmospheres. The treatment included 25 to 40 sittings. The improvement seemed to be progressive after treatment. He proposes to maintain the benefit by another course of a few sittings each year.

63. **Chromic Acid Diabetes.**—Kossa has established that most of the compounds of chromic acid, and especially potassium chromate, induce glycosuria in warm-blooded animals, most pronounced in dogs. This chromic acid diabetes belongs to the group of "kidney diabetes" like phloridzin diabetes. The proportion of sugar in the blood does not increase after the excretion of urine has been prevented.

59. **Lowering the Pelvis in Operations on the Biliary Passages.**—Ruehl proclaims that by lowering the pelvis so that the patient is in a half standing position in operations on the biliary passages, hemostasis is materially facilitated as the blood flows down without masking the field of operation. Over-sight of the field is much more complete.

65. **Carcinoma and Malaria.**—Prochnik is the retired chief of the medical department of the Dutch army in the East Indies. He states that carcinoma was not at all rare in his experience in Java, etc., and that as every one had malaria more or less, it must have accompanied or followed malarial infection in nearly every case. There is no antagonism therefore between carcinoma and malaria. On the contrary, he is inclined to admit that malaria is a predisposing factor in the evolution of carcinoma of the liver, the most common variety in his tropical experience.

67. **A New Reaction of Human Milk.**—Bordet has called attention to the precipitation of the albuminoids in milk when it is added to the serum of animals which have been previously injected with milk from the same source. Schlossmann found further that the fluid from a hydrocele on a breast child was

also able to precipitate the albuminoids in human but not in cow's milk. Moro now announces that if a few drops of human milk are added to a few c.c. of fluid from a hydrocele, in a few minutes the hydrocele fluid coagulates into a solid mass. This reaction does not occur with cow's or goat's milk. The hydrocele fluid evidently contains fibrinogen, and the milk, fibrin ferment. The combination of the two induces the coagulation. It occurs even with minute quantities of the milk; all the serum in contact with the milk coagulates around it. The same reaction occurs when human serum is added instead of the milk, but much less pronounced and much slower, and the same difference is observed when the human milk is boiled or long heated. Particles of coagulated ox blood also induced a slow and partial coagulation.

70. **Ship Physicians in the Byzantine Epoch.**—Bloch has found a reference in the works of Paulos of Ægina dating from the seventh century in which he speaks of the three classes of medical men: city, country and ship physicians.

72. **Origin of Syphilis.**—Scheube cites extensively from Spanish medical works of the time of Columbus which describe a disease found among the natives of Haiti by the Spanish explorers. It was mild among the natives, but proved virulent for the Spaniards who contracted it and infected others on their return. The description tallies exactly with that of syphilis, he thinks. He has become convinced that Haiti, and possibly the other West Indian islands, were the original source of infection with syphilis. It had probably not spread to the North American continent, as the natives on the continent were free from it and suffered from its ravages when it was introduced among them. The mildness of the disease in Haiti suggests that it must have been long established there. Pre-Columbian syphilitic relics could alone decide the question, but Virchow announced in 1895 that not a single pre-Columbian bone had yet been discovered which can be adduced as conclusive evidence in favor of the existence of syphilis.

73. **Value of the Gelatinized Urine Method of Bacteriologic Diagnosis of Typhoid.**—Strada found that Piorkowsky's method is simple and reliable, but that it varies with the age of the cultures used. They should consequently be young and the plates should be kept at a constant temperature of 22 C. The urine should be from patients on a predominantly vegetable diet, as otherwise it is not sufficiently alkaline. The bacteriologic test proved positive in 20 out of 22 patients examined and enabled the diagnosis to be definitely established within twenty-four hours. The contradictory results obtained in other clinics are probably due to the progressive loss of their differential characteristics by the bacilli as they age. Piorkowsky recommends to leave the normal urine for twenty-four to forty-eight hours, until it has become spontaneously alkaline, then add .5 per cent. of peptone, 33 per cent. of gelatin and boil for an hour at 100 C., then filter without heat, and distribute in test tubes, sterilizing it for fifteen minutes and again the next day for ten minutes. It is then poured on plates and sown with the suspected material. The colonies of the typhoid bacilli send out long tendrils while the outlines of the colonies of the colon bacillus are sharply defined with none of the straggling growth of the typhoid colonies.

74. **Treatment of Arteriosclerosis with Trunecek's Inorganic Serum.**—Zanoni confirms all that Trunecek claims for his serum. His experience includes three cases of severe arteriosclerosis treated with it. He ascribes the benefit derived to the chemical modification of the blood serum and the consequent stimulation of nutrition and function of the fibers in the heart and vessels.

75. **Treatment of Trigeminal Neuralgia by Resection of the Cervical Sympathetic.**—Cavazzani reports his third case of rebellious trigeminal neuralgia cured by resection of the cervical sympathetic. The benefit was not immediately apparent in any case, but became more and more pronounced with the lapse of time.

76. **Action of Anti-Periodic Drugs on the Parasite of Malaria.**—Lo Monaco and Panichi announce that a drop of a solution of quinin added to a fresh specimen of malarial blood, affects the parasites in proportion to its concentration. A weak solution causes them to contract for a few minutes and then expand with marked pseudopodia. This condition of excitement is still more pronounced if a drop of a medium solution of quinin is added to the specimen, and it terminates in the escape of the parasite from the blood corpuscle. A still stronger solution permanently shrivels the parasite and it does not leave the corpuscle. They, therefore, administer quinin in malaria in the dose and solution equivalent to that which produces the detachment of the parasite from the corpuscle *in vitro*—the second phase of the action of quinin. They state that the smallest forms of the parasite are the most resistant to quinin, and that all the parasites grow more resistant the longer the interval since the febrile attack. They conclude from the latter fact that there must be some substance in the blood at the time of the attack which has an antiparasitic action and the effect of quinin administered at this time is re-enforced by this substance already in the blood. This antiparasitic substance affects all the forms of malaria and all species of the malarial parasite with the sole exception of the young unpigmented variety found in estival tertian. The pigmented forms, on the other hand, are resistant to the action of quinin during apyrexia, but become less resistant during a febrile attack and can then be detached from the red corpuscles with a comparatively weak solution of quinin. But when the malaria has assumed the pernicious form, both the pigmented and the non-pigmented forms display great resistance, probably owing to the absence of the antiparasitic substance in the blood under these conditions, or the presence of some yet unknown antagonistic substance. The quinin behaves the same whether in a solution of distilled water or in a .38 per cent. saline solution. A stronger saline solution prevents these phenomena.

77. **New Method of Isolating the Typhoid Bacillus.**—Cambier proposed recently to utilize the property possessed by the typhoid bacillus of passing through a Berkefeld filter, as a means of differentiating it. Bifli pointed out at the time that the test was unreliable as the bacterium coli also possessed this property. The latter now suggests a method of differentiating the typhoid bacillus by the combination of these two phenomena, and in this preliminary communication lauds this latest method as simple, convenient and reliable. The material to be examined is sown in bouillon containing a certain amount of serum known to agglutinate the bacterium coli. The latter as it develops becomes agglutinated, and hence is unable to pass through the filter with which the test tube is supplied, while the typhoid bacillus passes through it and develops in pure cultures on the farther side. The test can be reversed and pure cultures of the colon bacillus be derived by substituting a serum that agglutinates the typhoid bacillus. The colon bacillus agglutinating serum must be prepared by inoculation with different species of colon bacilli, so that the agglutinating effect will be certain. The effect must also be tested to determine the proper dilution, as an excess might affect also the typhoid bacillus, while if too weak it might fail to agglutinate all the colon bacilli.

## Queries and Minor Notes.

### DISCOVERY OF CHLOROFORM AND ETHER.

LEBANON, ILL., Feb. 17, 1902.

*To the Editor:*—Will you please state in THE JOURNAL the facts regarding the discovery of chloroform and ether as anesthetics? Were these chemicals in use before their use as anesthetics? Who first used each and both as anesthetics? J. H. F.

ANS.—Chloroform is said to have been discovered in 1831, independently by Liebig, Soubeiran, and Guthrie; its chemical composition was first determined by Dumas in 1834. Chloroform was experimentally studied by Flourens in 1847, and was first employed in surgical anesthesia on Nov. 15, 1847, by Sir James Y. Simpson, in Edinburgh. It had previously been used in obstetrics. Ether was discovered, it is said, by Valerius Cordus, in 1540, and was called by him oleum vitrioli dulce. Another authority says that the substance was discovered by an Arabian chemist, Djabar Yeber, and its method of manufacture by Dr. Michael Morris. It

was employed as early as 1785, as an inhalation for asthma, and its narcotic properties caused it to be used in the treatment of phthisis early in the nineteenth century. About 1840 it was common among medical students to inhale ether in order to experience the exhilarating effect. In 1842, Dr. Crawford W. Long, of Jefferson, Jackson County, Ga., administered ether for the removal of a small tumor and for several subsequent minor operations. William T. G. Morton, a dentist of Boston, also claimed to have been the first to employ ether as an anesthetic, and he administered ether on Oct. 17, 1846, in the Massachusetts General Hospital for Dr. Warren. The question of the priority of the use of ether is a vexed one and has provoked much acrimonious discussion.

# The Public Service.

## Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., Jan. 30 to Feb. 12, 1902, inclusive:

Robert A. Anderson, contract surgeon, from Clarksdale, Miss., to duty at Fort Duchesne, Utah.

Peter W. Beckman, contract surgeon, from Fort Duchesne, Utah, to Alton, Ill., for annulment of contract.

Justus M. Brown, colonel and asst. surgeon-general, to report in person to the Surgeon-General in Washington, D. C., on official business of the Medical Department and thereafter to return to his proper station in New York City. George H. Cassaday, contract dental surgeon, now at San Francisco, to proceed to Manila, P. I., for assignment to duty.

James B. Ferguson, contract surgeon, former orders so amended as to direct him to proceed to Fort Sheridan, Ill., for duty at that post.

James D. Glennan, major and surgeon, U. S. A., on his arrival in San Francisco, to report to the commanding general, Department of California, to relieve Major Robert J. Gibson, surgeon, U. S. A.

Harry Greenberg, contract surgeon, from Milwaukee, Wis., to San Francisco, en route for assignment in the Division of the Philippines.

Hubert Grieger, contract surgeon, from South Milwaukee to San Francisco, en route to the Division of the Philippines.

George L. Hicks, contract surgeon, now at Cambridge, Md., will proceed to Fort Totten, N. Y., for temporary duty.

Frank A. Hodson, contract surgeon, from Fort Mackenzie, Wyo., to San Francisco, en route for assignment in the Division of the Philippines.

Palmer H. Lyon, captain and asst.-surgeon, Vols., from temporary duty at Fort Hamilton, N. Y., to the Division of the Philippines via San Francisco.

Arthur W. McArthur, contract surgeon, from Fort Yates, N. D., to his home, Chillicothe, Mo., for annulment of contract.

Ben H. Metcalf, contract surgeon, now at Winthrop, Mass., to report for temporary duty at Fort Banks, Mass.

Charles E. Marrow, lieutenant and asst.-surgeon, U. S. A., former orders directing him to proceed to Fort Morgan, Ala., amended so as to require him to proceed to Fort Totten, N. Y.

William G. Miller, captain and asst.-surgeon, U. S. Vols., leave of absence from the Division of the Philippines extended one month.

Edward J. Morris, major and surgeon, U. S. A., from duty at the Model Camp, Angel Island, Cal., to the Division of the Philippines.

Edward L. Munson, captain and asst.-surgeon, U. S. A., member of a board of officers at Washington, D. C., to investigate and report upon a uniform size of packing boxes for transportation beyond the sea to secure ready handling and admit of packing securely in army wagons and upon pack animals, taking into consideration the contents of the boxes, weight, marking, etc.

Lorin B. Ohlinger, contract surgeon, leave of absence for one month granted.

Frank D. Pease, contract surgeon, now at Los Angeles, Cal., to proceed to Fort Mackenzie, Wyo., for duty.

Elias H. Porter, contract surgeon, relieved from duty in the Department of the East and on the expiration of his present leave of absence to proceed via San Francisco to the Division of the Philippines for assignment to duty.

John J. Reilly, lieutenant and asst.-surgeon, U. S. A., now at Fordham, N. Y., is relieved from further duty in the Division of the Philippines, and on the expiration of his present leave of absence will report for duty at Fort Slocum, N. Y.

Edwin W. Rich, lieutenant and asst.-surgeon, U. S. A., former orders directing him to report at San Francisco, for transportation to Manila, P. I., revoked; he will report for duty at the General Hospital, Presidio of San Francisco.

Charles Richard, major, surgeon, U. S. A., leave of absence for fifteen days granted.

A. H. Simonton, contract surgeon, leave of absence for two months granted.

John T. H. Slayter, captain and asst.-surgeon, Vols., having tendered his resignation, is honorably discharged from the service of the United States.

Blair D. Taylor, major and surgeon, U. S. A., leave of absence extended ten days.

Samuel S. Turner, contract surgeon, from Fort Sheridan, Ill., to duty at Fort Yates, N. D.

William J. Wakeman, major and surgeon, U. S. A., on his arrival at the Presidio of San Francisco will report for duty at the Model Camp, Angel Island, Cal.

M. Manley Waterhouse, contract surgeon, from duty at Fort Wadsworth, N. Y., to Fort Hancock, N. J.

Francis A. Winter, captain and asst.-surgeon, U. S. A., member of an army retiring board at St. Louis, Mo.

Marshall W. Wood, major and surgeon, U. S. A., member of an army retiring board at St. Louis, Mo.

## Navy Changes.

Changes in the Medical Corps of the Navy, for the week ended February 15:

Surgeon L. W. Spratling, order to the Naval Hospital, Portsmouth, N. H., revoked; ordered to continue on waiting orders.

P. A. Surgeon E. V. Armstrong, detached from recruiting duty, February 17, and ordered to the *Olympia*.

P. A. Surgeon J. E. Page, ordered to Seattle, Wash., March 1, for temporary recruiting duty.

Rear-Admiral P. M. Rixey, commissioned Surgeon-General of the Navy and Chief of the Bureau of Medicine and Surgery, with the rank of rear admiral, from Feb. 10, 1902.

## Marine-Hospital Changes.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the U. S. Marine-Hospital Service for the seven days ended Feb. 13, 1902:

P. A. Surgeon Rupert Blue, to proceed to Des Moines, Iowa, for special temporary duty.

P. A. Surgeon E. K. Sprague, to assume command of the service at Detroit, Mich., relieving Surgeon J. J. Kinyoun.

P. A. Surgeon A. R. Thomas, to proceed to Liverpool, England, for special temporary duty.

A. A. Surgeon C. B. Sweeting, bureau letter of Jan. 16, 1902, granting leave of absence for five days from Jan. 23, 1902, amended so that said leave shall be effective from February 16.

Pharmacist F. L. Brown, granted leave of absence for ten days from February 10.

## Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, U. S. Marine-Hospital Service, during the week ended Feb. 14, 1902:

SMALLPOX—UNITED STATES.

District of Columbia: Washington, Jan. 25-Feb. 1, 2 cases.

California: Los Angeles, Jan. 25-Feb. 1, 7 cases; San Diego, Jan. 25, 1 case; San Francisco, Jan. 26-Feb. 2, 9 cases.

Illinois: Feb. 1-8, Belleville, 4 cases; Chicago, 2 cases; Danville, 2 cases; Freeport, 1 case; Galesburg, 1 case.

Indiana: Evansville, Jan. 25-Feb. 6, 13 cases; Indianapolis, Feb. 1-8, 23 cases.

Iowa: Clinton, Feb. 1-8, 3 cases; Ottumwa, Dec. 28-Feb. 1, 75 cases.

Kansas: Wichita, Feb. 1-8, 1 case.

Kentucky: Covington, Feb. 2-9, 3 cases; Lexington, Feb. 1-8, 3 cases.

Louisiana: New Orleans, Feb. 1-8, 3 cases.

Maryland: Baltimore, Feb. 1-8, 8 cases.

Massachusetts: Boston, Feb. 1-8, 54 cases, 7 deaths; Brockton, Feb. 1-8, 1 case; Cambridge, Feb. 1-8, 4 cases; Everett, Jan. 25-Feb. 8, 4 cases; Fall River, Feb. 1-8, 1 case; Holyoke, Feb. 1-8, 1 case; Lowell, Feb. 1-8, 4 cases; Malden, Feb. 1-8, 1 case; New Bedford, Feb. 1-8, 1 case; Newburyport, Jan. 25-Feb. 8, 3 cases; Somerville, Feb. 1-8, 1 case.

Michigan: Bay City, Jan. 25-Feb. 8, 12 cases; Detroit, Feb. 1-8, 6 cases; Ludington, Feb. 1-8, 2 cases.

Minnesota: Minneapolis, Jan. 25-Feb. 1, 18 cases.

Montana: Butte, Jan. 24-Feb. 2, 1 case.

Nebraska: Omaha, Feb. 1-8, 45 cases.

New Hampshire: Nashua, Feb. 1-8, 3 cases.

New Jersey: Camden, Feb. 1-8, 8 cases, 1 death; Jersey City, Feb. 2-9, 15 cases; Newark, Feb. 1-8, 33 cases, 7 deaths.

New York: Feb. 1-8, Binghamton, 1 case; New York, 61 cases, 10 deaths.

Ohio: Cincinnati, Jan. 31-Feb. 7, 12 cases; Cleveland, Feb. 1-8, 5 cases; Dayton, Feb. 1-8, 3 cases; Hamilton, Feb. 1-8, 3 cases; Toledo, Feb. 1-8, 2 cases.

Pennsylvania: Allegheny City, Feb. 1-8, 1 case; Norristown, Feb. 1-8, 1 case; Philadelphia, Feb. 1-8, 110 cases, 20 deaths; Pittsburg, Feb. 1-8, 1 case; Providence, Feb. 1-8, 1 case.

South Carolina: Charleston, Feb. 1-8, 3 cases; Greenville, Jan. 25-Feb. 8, 4 cases.

South Dakota: Sioux Falls, Feb. 1-8, 2 cases.

Tennessee: Feb. 1-8, Memphis, 15 cases; Nashville, 1 case.

Texas: Houston, Feb. 1-8, 32 cases, 2 deaths.

Washington: Tacoma, Jan. 24-Feb. 2, 20 cases.

Wisconsin: Fond du Lac, Feb. 1-8, 3 cases; Green Bay, Feb. 2-9, 19 cases, 1 death; Milwaukee, Feb. 1-8, 7 cases.

SMALLPOX—FOREIGN.

Austria: Budapest, Jan. 15-21, 11 cases; Prague, Jan. 11-18, 11 cases.

Belgium: Antwerp, Jan. 11-25, 6 cases, 1 death.

Brazil: Rio de Janeiro, Dec. 21-Jan. 12, 98 deaths.

Canada: Halifax, Jan. 25-Feb. 8, 3 cases; Quebec, Jan. 25-Feb. 3, 80 cases, 3 deaths; Winnipeg, Jan. 25-Feb. 1, 10 cases.

Colombia: Cartagena, Jan. 26, 2 deaths.

Great Britain: Liverpool, Jan. 19-25, 8 cases.

Italy: Naples, Jan. 18-25, 9 cases, 1 death; Rome, Dec. 16-21, 1 death.

Russia: Moscow, Jan. 4-18, 15 cases, 6 deaths; Odessa, Jan. 11-25, 13 cases, 3 deaths; St. Petersburg, Jan. 12-25, 12 cases, 3 deaths; Warsaw, Jan. 4-11, 2 deaths.

Spain: Corunna, Jan. 18-25, 1 death.

Uruguay: Montevideo, Dec. 28-Jan. 4, 77 cases, 4 deaths.

YELLOW FEVER.

Brazil: Rio de Janeiro, Dec. 21-Jan. 12, 15 deaths.

Mexico: Vera Cruz, Jan. 25-Feb. 1, 1 case, 1 death.

CHOLERA.

Java: Batavia, Dec. 7-14, 3 cases.

Straits Settlements: Singapore, Dec. 21-28, 1 case.

PLAGUE—INSULAR.

Hawaii: Honolulu, Jan. 23-24, 2 cases; Kauai, Eleele, Jan. 22-26, 3 cases.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, Jan. 4-12, 8 deaths.